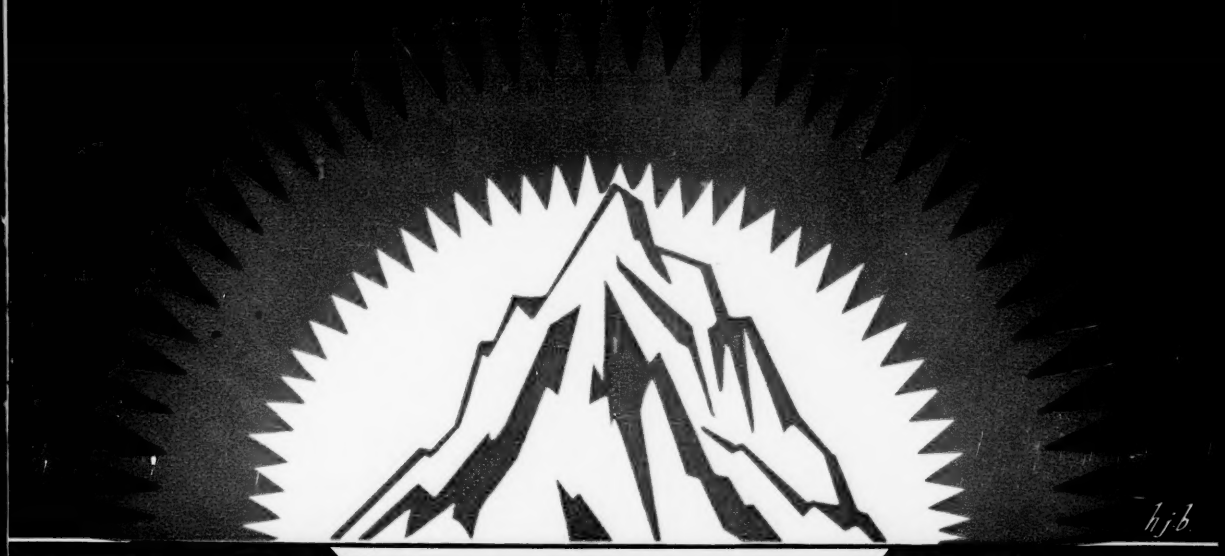
ICE AND Refrigeration



PUBLISHED BY NICKERSON & COLLINS CO., CHICAGO · NEW YORK

58th YEAR · DECEMBER, 1949

Full Power

when you need it

Assure it with the oil that keeps engines clean—TEXACO D-303 MOTOR OIL

FULL power in the pinches . . . smooth, trouble-free operation all the time . . . that's your assurance when you use *Texaco D-303 Motor Oil.* Operators' experience everywhere proves this fully detergent, dispersive oil assures more mileage between overhauls, lower maintenance costs.

Texaco D-303 Motor Oil cleans as it lubricates. Rings stay free . . . valves act lively and seat properly . . . because *D-303* gives sludge, varnish and hard carbon no chance to form. In addition, it protects alloy bearings against corrosion . . . guards moving parts against scuffing and wear.

Give chassis parts all-weather protection, too. Lubricate with *Texaco Marfak.* It won't jolt or squeeze out of bearings . . . resists washout . . . protects against rust and wear. In wheel bearings, use *Texaco Marfak Heavy Duty.* No seasonal change is required.

Let a Texaco Lubrication Engineer work with you to simplify your Lubrication procedures, reduce your maintenance and operating costs. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

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TEXACO Lubricants and Fuels

FOR ALL TRUCKING EQUIPMENT

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A NEW REFRIGERATION CONDENSERS BOOKLET BY Vogt

Here's pertinent, up-to-the-minute information on our complete line of refrigeration condensers . . . a 24 page booklet showing types and sizes designed to deliver low temperature liquid with the lowest condensing pressure.

Vogt Refrigeration Condensers are fabricated from top quality plates, tubes, pipes, forgings, and castings by skilled workmen in modernly equipped shops. Units are designed, tested and stamped to A.S.M.E. Code requirements.

Vogt
FOR BETTER REFRIGERATION

HENRY VOGT MACHINE CO., LOUISVILLE 10, KY.

BRANCH OFFICES: NEW YORK, PHILADELPHIA, CLEVELAND, CHICAGO, ST. LOUIS, DALLAS

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CLEAR RAW WATER AERATING SYSTEMS

MARTOCELLO AIR SYSTEMS have been producing Quality Ice for over thirty years, and their popularity is still growing today. From the largest to the smallest Ice Plant owner the MARTOCELLO name stands out in Quality, Economy and Service.

PUT YOUR DOLLAR TO WORK BY INVESTING IN A SURE THING!

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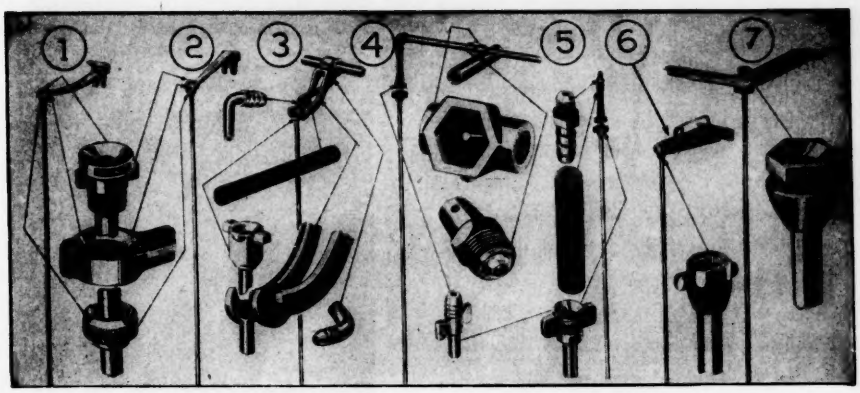
DON'T TAKE A GAMBLE!

Bet On "MARTOCELLO"

for the finest Air Agitation Systems



- Quality
- Economy
- Service

THE ILLUSTRATION ABOVE SHOWS THE FOLLOWING CLEAR ICE MAKING SYSTEMS

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2. MARTOCELLO SELF-CENTERING DROP TUBE BRACKET, Straight Form
3. MARTOCELLO SERIES DROP TUBE BRACKET
4. DOUBLE BRACKET SYSTEM ASSEMBLY
5. SERIES DROP TUBE ASSEMBLY
6. GALVANIZED STEEL TRUNNION TYPE BRACKET ASSEMBLY
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"Serving the Ice Industry Since 1916"... "There is no Substitute for MARTOCELLO QUALITY"

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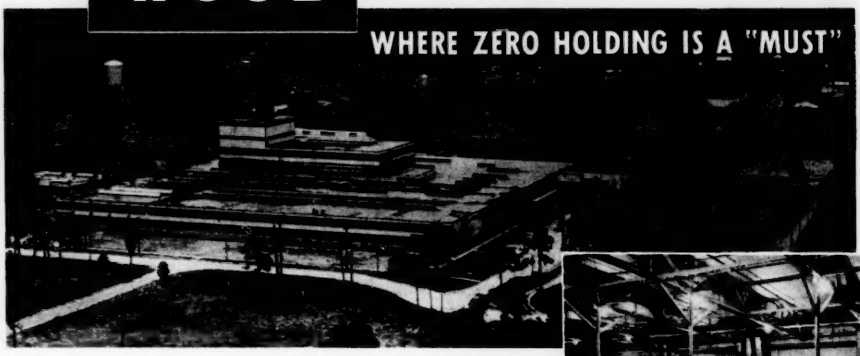
PALCO INSULATION WOOL

Juice Industries, Inc. plant at Dunedin, Florida, built to produce "Sno-Crop" brand orange, grapefruit, and grape juices in the new frozen concentrate form. Marketing is handled through Sno-Crop Marketers, Inc. 175 tons of PALCO WOOL were used to insulate two large storage rooms and two freezers.

WHERE ZERO HOLDING IS A "MUST"



One of two large zero storage rooms gaining maximum operating efficiency through use of PALCO WOOL INSULATION.

BETWEEN tree and table, accurate temperature control is vitally important to the new frozen juice industry. In the new processes for low temperature concentration of orange and other fruit juices, water is extracted so rapidly and at such low temperatures that flavor remains virtually unchanged. After slush freezing at 17°, juice is canned and then hardened and held at 0° through storage or shipment. Uniformly low thermal conductivity of PALCO WOOL INSULATION is a major factor both in maintaining these critical temperatures and in reducing operating costs. The ideal low temperature insulation, PALCO WOOL, is moisture resistant, odorless and odor-proof, non-settling, flame-proof, durable, vermin-repellent — and exceptionally low in cost.

Efficient quick freezing is aided by PALCO WOOL INSULATION at the Juice Industries, Inc., plant.

Write today for the PALCO WOOL COLD STORAGE MANUAL *or the* LOCKER PLANT PLAN *and* CONSTRUCTION MANUAL.

FLAMEPROOF INSULATION FROM DURABLE REDWOOD BARK

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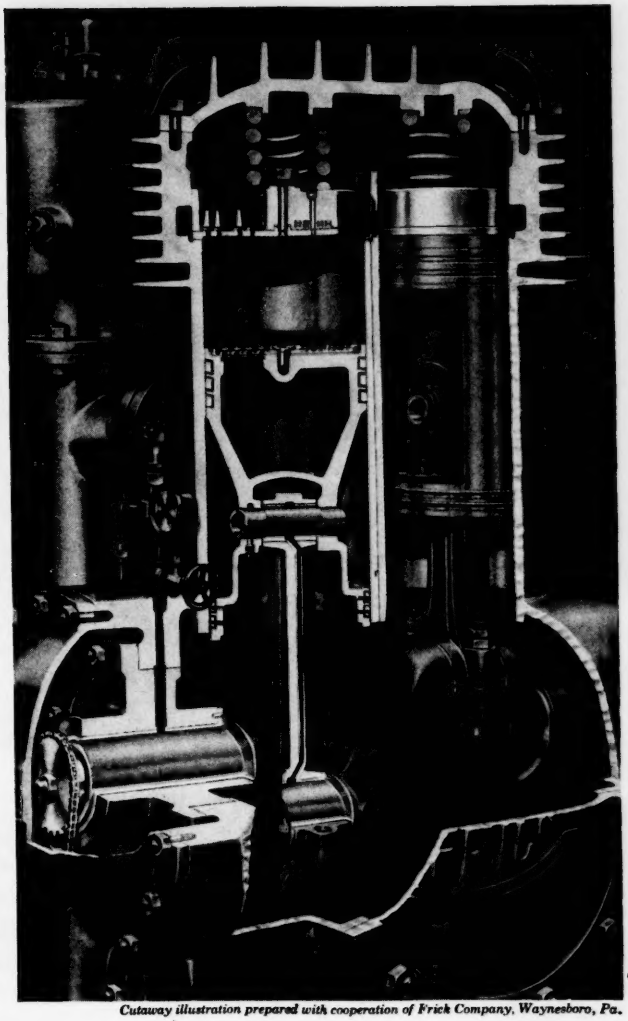
Inside Knowledge on Lubrication Problems

— FREON COMPRESSORS —

This is One of a Series of Messages on Common Problems in Your Plant

Peak Protection FOR YOUR FREON COMPRESSOR



Cutaway illustration prepared with cooperation of Frick Company, Waynesboro, Pa.

CORRECT LUBRICATION for Freon* Compressors like this means more than just oil. For maximum efficiency at all times, you need a specially selected oil that will perform satisfactorily not only in the compressor itself, but also throughout the entire refrigeration system.

In the compressor, this oil must have high film strength to prevent metal-to-metal contact of swiftly moving parts and so minimize wear. It must have correct viscosity to provide effective piston seals and to distribute freely to bearings. It must also have high stability to resist break-down and to keep cylinders and crankcase clean and free from deposits.

Socony-Vacuum engineers have made a special study of Freon Compressor lubrication problems. Famous Gargoyle Oils are available to meet a variety of operating conditions. Ask your Socony-Vacuum Representative for recommendations for your particular system.

GARGOYLE Lubricants

SOCONY-VACUUM

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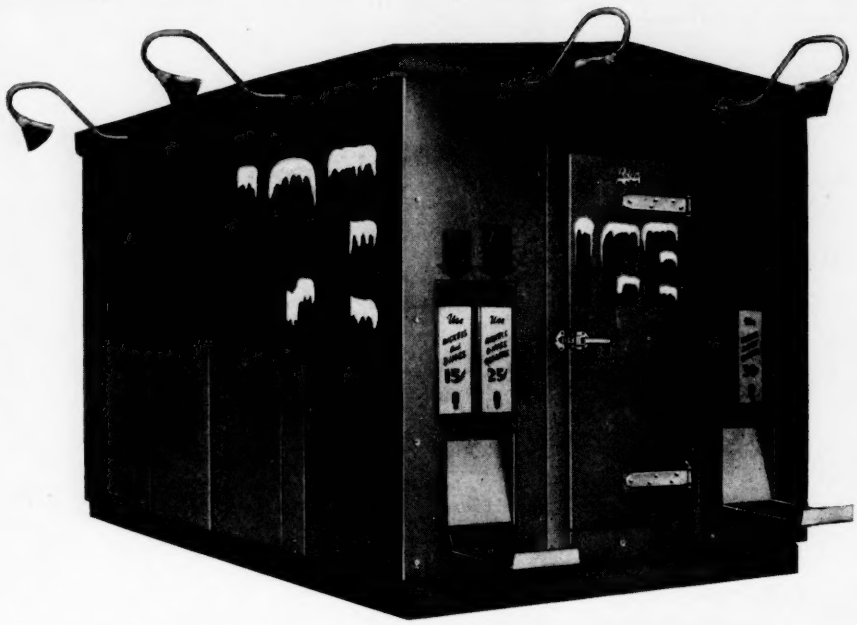
Socony-Vacuum Correct Lubrication

FOR EVERY MACHINE ... EVERY OPERATING CONDITION

Another **POLAR** *Installation Selling More Ice* **AUTOMATICALLY**



Operators of Polar Aluminum Ice Vending Stations report increases in ice sales of from 25 to 50%! You, too, can depend on service-tested Polar equipment to boost your sales and profits.

A Polar Station *sells more ice automatically* by making it available in convenient locations 24 HOURS A DAY, EVERY DAY IN THE YEAR! A Polar Station vends block ice or bags of cubes. It has ample storage space and operates economically. Zero temperature guaranteed at 95° outside temperature.

NOW is the time to investigate the profit possibilities of merchandising ice the Polar way for more ice sales . . . for more ice profits, at LOWER DISTRIBUTION COSTS!

WRITE TODAY FOR COMPLETE INFORMATION.

REFRIGERATION ENGINEERING COMPANY
211 Foshay Tower, Minneapolis 2, Minn.

Send me your 1950 catalog on POLAR ice vending stations

Name_____

Address_____

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POLAR ICE VENDING STATIONS—

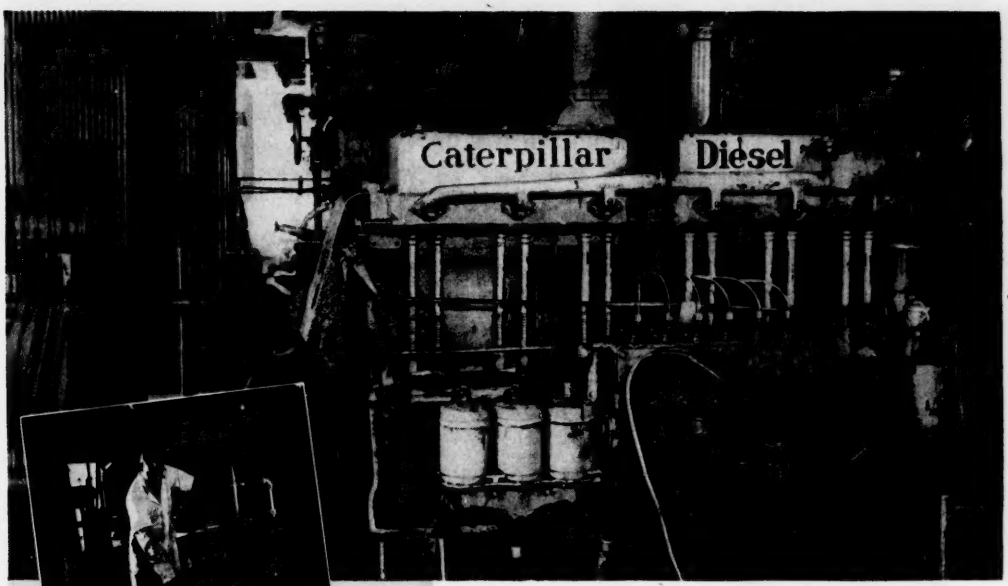
***FIRST* with aluminum construction**
***FIRST* with coin accumulator**
***FIRST* with automatic electric defrost**

We will continue to pioneer new developments in automatic ice vending and will incorporate new improvements in our standard line of Polar Stations and vendors. The 1950 line of Polar Equipment features many "extras" now available to you at no extra cost.

NEW! THE POLAR JUNIOR ICE VENDING STATION. Completely assembled at our factory, it is shipped on skids ready to be put into operation on arrival at your location. The Polar Junior Station comes equipped with vendors and features the same high quality construction as the Deluxe Sectional Models. Write for literature.

REFRIGERATION ENGINEERING CO.

211 Foshay Tower, Minneapolis 2, Minn.



69,984 HOURS

with only two major overhauls!

"Through savings over former electric power, this engine has paid for itself several times."
J. H. DIXON

CATERPILLAR
REG. U. S. PAT. OFF.
DIESEL ENGINES • TRACTORS MOTOR GRADERS EARTHMOVING EQUIPMENT

"Caterpillar" Diesel Engines write their own best ads. Here's one—a hard-working, reliable D13000—with a record that speaks for itself.

In its 13 years of service for the Dixon Ice Co., Inc., Greensboro, N. C., this D13000 has logged 69,984 hours with only two major overhauls. It still has its original fuel pumps and injection valves. Driving one Frick and one Vilter compressor, it operates 24 hours daily, 9 months a year—and its only down time is for oil changes.

On job after job "Caterpillar" Diesel Engines are writing similar records of long life and dependability. No question about it, the sound engineering and quality materials back of them really pay off for their owners.

Your "Caterpillar" dealer, too, backs them with expert, on-the-job service. He knows power. Call him today and let him show you what "Caterpillar" Diesel Engines can do for you.

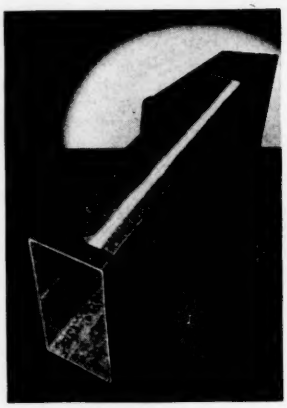
CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

CATERPILLAR TRACTOR CO., Box IR-12, Peoria, Ill.
Send me your latest booklet, "Refrigeration Assured."

Name_____

Address_____

KNICKERBOCKER PRODUCTS ON DISPLAY



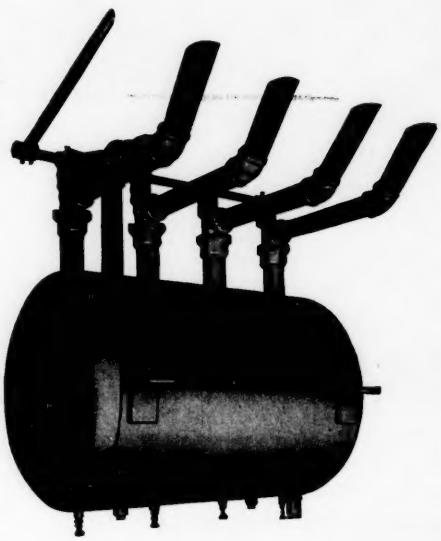
If It's An ICE CAN

KNICKERBOCKER can build it.

LARGE - SMALL; WELDED - RIVETED
HIGH PRESSURE - LOW PRESSURE
AND

MULTIPLE CAN GRIDS TO LIFT ANY NUMBER AND SIZE ICE CAN AT ONE TIME.

The ACCURATE CAN FILLER
Always the same Amount of Water and SANITARY!



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Any Size
Any Desired Combination of Door and Drawer Compartments

CORE FILLERS — CORE SUCKERS — BRINE TESTING KITS — FISH PANS
FISH FREEZER TRUCKS — LOCKER KEY CABINETS

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Cable Address: KNICSTACO

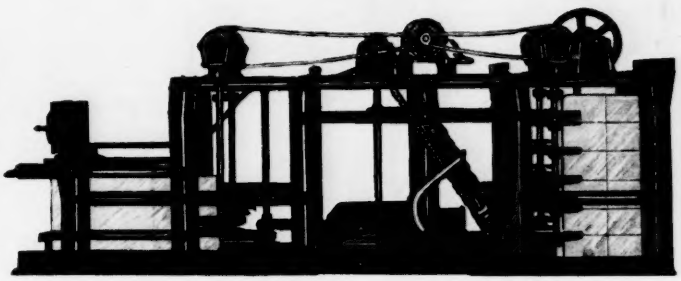
KNICKERBOCKER STAMPING COMPANY

Parkersburg, W. Va.

★ *Perfection* A MODEL FOR EVERY REQUIREMENT ★

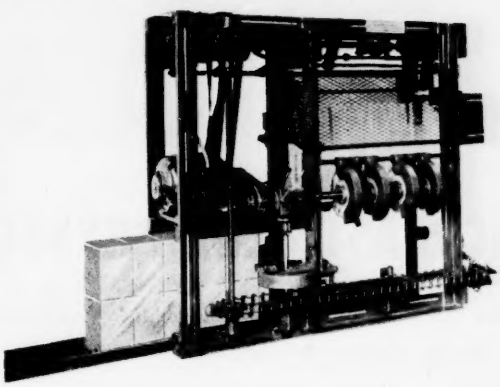
PERFECTION SPECIAL

The Perfection Special receives ice blocks on edge, scores them and discharges them standing on end. Capacity 4½ blocks per minute or 270 blocks per hour. This is really two machines in one — a combined heading and scoring machine — a sturdily built long-lived machine.



PERFECTION MILLER

The Miller machine receives the ice block on edge, completely scores it and discharges the block on edge in one operation. Capacity 6 blocks per minute or over 50 tons per hour. Quite a number of these machines over 20 years of age are still scoring ice and giving satisfactory service.



NOW . . . is the time to consider next year's requirements. If you need an ice scoring machine, it is most economical to buy the BEST . . . get a "PERFECTION."

Write, wire or phone: Fort Worth 3-1258 for more information.

America's MOST TRUSTED ICE SCORING MACHINES

ICE SCORING MACHINE COMPANY
P.O. Box 2140 FORT WORTH, TEXAS

INCREASES COMPRESSOR EFFICIENCY 15%

Suniso Oil Keeps Compressors Working, Reduces Overhauls and Guards Against Breakdown with Possible $25,000 Loss

A famous sports arena had trouble with the ammonia compressors used to freeze the rink. Lacquer and carbon deposits accumulated; the oil lines clogged with sludge; major overhauls were required at frequent intervals. With efficiency at a low point, breakdown was an ever-present possibility. Failure on an ice follies or a hockey night would have meant a loss of more than $25,000.

About three years ago the arena changed to a "Job Proved" Suniso Oil, recommended by one of our engineers. A vast improvement followed. The lines kept open. No lacquer or carbon deposits formed. Overhauls were reduced to a matter of routine maintenance, and efficiency increased 15 percent. Inspected as time went along, the compressors were found to be absolutely clean. And—what the arena most wanted—the bugaboo of breakdown disappeared. Based on this performance, Suniso was adopted as standard for the compressors, and it has been used ever since.

This is the age of refrigeration and air-conditioning, and as it advances, use of Suniso advances with it. In fact, Suniso Oils are first choice of engineers in these fields, probably more Suniso being used than all other refrigeration oils combined. They come in six different viscosities. All have exceptionally low pour-points, and all have wax-separation points much lower than industry requirements. They do not react with Freon or other modern refrigerants. To obtain complete information about "Job Proved" Suniso Oils for refrigeration and air-conditioning, call or write the nearest Sun Office.

SUN OIL COMPANY · *Philadelphia 3, Pa.*
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SUN PETROLEUM PRODUCTS
"JOB PROVED" IN EVERY INDUSTRY

SUNOCO

J. F. NICKERSON, Founder

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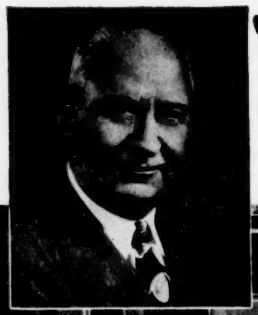


"On sanitation we take no chances- we insist on Packaged Processed Ice"

SAYS LOUIS G. PALMER, OWNER, YE OLDE WAYNE CLUB, DETROIT, MICH.

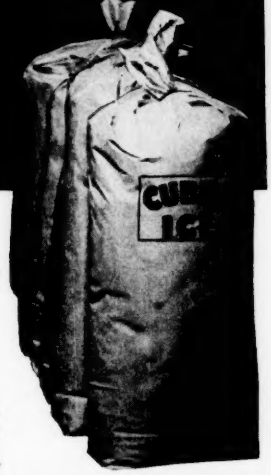
A view of the Mad Anthony Room of Ye Olde Wayne Club, a smart dining place of Detroit, Mich.

Watch Processed Ice Sales Go Up When You Switch to Paper Bags!

SALES always go UP when you switch to Union one-trip paper ice bags for processed ice! That's because icing with these handy bags is so easy that customers use more ice. And the cleanliness of ice delivered in old-fashioned open-top containers is insured by the tightly closed top of the Union bag, which keeps out dirt and prevents spilling or pilferage.

Yes, the Union one-trip ice bags cut your costs, too. The sturdy wet-strength paper — two layers thick — definitely retards melting. Eliminating re-handling of old-style containers speeds up operations at the loading dock, saves drivers' time.

You win on sales and you win on lower costs when you switch to Union one-trip paper ice bags. Write for samples.



Wet-Strength Paper Ice Bags have tremendous strength even when soaking wet... thanks to a water repellent resin that binds the fibres of the paper firmly together.

ONE TRIP

UNION Paper Ice Bags

A product of the UNION BAG & PAPER CORPORATION • Woolworth Bldg., New York 7, N. Y.

Bags of Kraft, Transparent Films Waxed Paper Glassine, Laminates

IN THIS ISSUE —

National Ice Convention

Meeting in New York City November 15 to 18, the National Association of Ice Industries held its thirty-second annual convention. Pausing briefly to observe the 100th anniversary of the ice industry in America the speakers and members of the convention turned their attention to current problems and business conditions. No new innovations or panaceas were offered but rather a discussion of how to counteract adverse influences and to build better business. The complete convention report starts on page 19. On page 27 appears an article on the tribute paid Dr. John L. Gorrie in commemoration of his invention of an ice-making machine 100 years ago. President Garvey in his annual address (page 28) commented on the decline in ice sales and told what was being done to hold the gains made during the war years. An interesting report on National ice advertising presented by E. L. Gunn, Jr., chairman of the Operating Committee is on page 32. A report of the annual meeting of the Unit Ice Association Secretaries is on page 57.

How to Obtain Storage Costs

Part II of the series on cold storage costs by Haynes and Straub discusses the refrigeration required to chill, freeze and hold commodities in storage. The sources of the different heat loads are analyzed and illustrative calculations are presented. Tables and charts accompanying the text also provide short cuts the reader can use in setting up cost data on any particular refrigerated warehouse. The article appears on page 33.

The New Wage Hour Law

The newly amended Wage-Hour law becomes effective January 25, 1950, requiring that all employees covered by it be paid a minimum wage with time and one-half for overtime. Ice companies under certain conditions are exempt from this provision. An outline of these conditions is published on page 51.

AWA Convention

An advance release has been issued on the annual convention of the American Warehousemen's Association to be held at the Edgewater Beach Hotel, Chicago, Ill., January 30 to February 2. It is published on page 60.

Special N. A. R. W. Pre-Convention Issue

Following the very successful precedent established last year, the January issue of ICE AND REFRIGERATION will be a special pre-convention number for the fifty-ninth annual convention of the National Association of Refrigerated Warehouses to be held at the Edgewater Beach Hotel, Chicago January 30 to February 2. A preview of the program will be presented, along with special articles on the accomplishments of the asociation and other subjects that will be of particular interest to all those connected with the refrigerated warehousing industry.

Fortieth NAPRE Convention

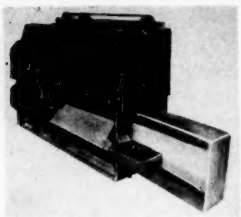
The N.A.P.R.E. held its 40th annual convention at Purdue University, November 8 to 11. A spokesman for Purdue told the attendants that the school had long emphasized close work with industry to aid in its problems and progress toward improvement in operations. Purdue faculty members were prominent on the educational program and they presented information of great practical merit. Along with the speakers from the industry they provided an unusually fine program on refrigeration engineering described on page 39.

The refrigerating engineers found that Purdue can furnish useful, basic knowledge to people of all ages. The only requirement is that they desire to learn. Specific information for daily use was given on water treatment and conversion control, electrical installations and maintenance, plant instruments, welding, machinery maintenance and many other subjects.

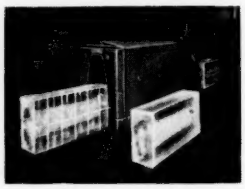
Reports from the field told how careful and well planned installations save money in operating costs and result in greater production. Evidence was given that moderate expenditures for plant modernization can pay big dividends if proper attention is given to details so that all the units of plant equipment can operate to best advantage. For example, one suction pipe added at a cost of 50 dollars increased output while making the operation of an 8 x 8 compressor unnecessary.

Cold Storage Holdings

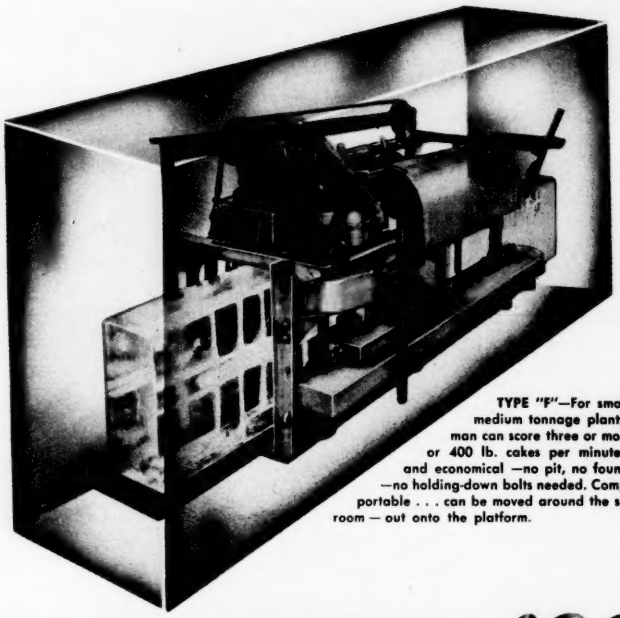
Cooler occupancy in refrigerated warehouses for November 1 showed an increase of seven points and freezer space an increase of three points over the previous month. The complete report is summarized on page 63. Holdings of selected frozen fruits and vegetables for October 1 and September 1 are reported on page 64.



TYPE "G"—The scoring machine the industry has been waiting for — a simple streamlined, compact, safe, automatic machine at a medium price. Semi-portable; requires no pit. A turn of the starting lever starts each scoring cycle — and it is automatically completed.



TYPE "UM"—A precision-built, fully automatic machine that accurately scores at the rate of 6 cakes (300 or 400 lb.) per minute. Feed and discharge conveyors are built integral with the scorer for straight-line operation.



TYPE "F"—For small and medium tonnage plants. One man can score three or more 300 or 400 lb. cakes per minute. Safe and economical —no pit, no foundation —no holding-down bolts needed. Completely portable . . . can be moved around the storage room — out onto the platform.

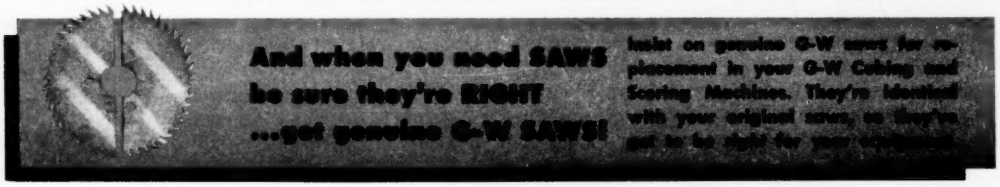
Clean, even scoring builds business -- WHEN YOU SCORE ICE USE G-W MACHINES

Users of G-W Type "F" Scoring Machines know their clean, even-scoring operation . . . how their economy in ice scoring will build up their business, reduce delivery costs. They know, too, all about their economical maintenance because they are "built to last." Says one user: "Our Type 'F' Scorer has been in constant use for nearly 14 years and has required very few repairs. It's given the best service of any piece of equipment we have bought since we started in business in 1906."

And now the new Type "G" brings automatic scoring to a medium priced unit! More rugged than the Type "F" and as precision-built as the Type "UM" — the new Type "G" Scorer is priced within the reach of every ice plant.

Type "UM" combines scoring with handling through its straight-line feeder and discharge conveyor.

Any of these G-W Scoring Machines will meet your plant conditions of tonnage and size requirements. Get in touch with a G-W engineer today — and SCORE ICE faster . . . easier . . . cheaper.


And when you need SAWS
be sure they're RIGHT
...get genuine G-W SAWS!
Insist on genuine G-W saws for replacement in your G-W Cubing and Scoring Machines. They're identical with your original saws, as they've got to be right for your machines.

G-W ICE TOOLS — A complete line of top-quality hand-tools . . . tongs, hooks, shavers, bars, chisels, etc. . . . designed to make manual handling of ice easy and safe—made tough to stand the gaff for years. Write for Bulletin No. 480.

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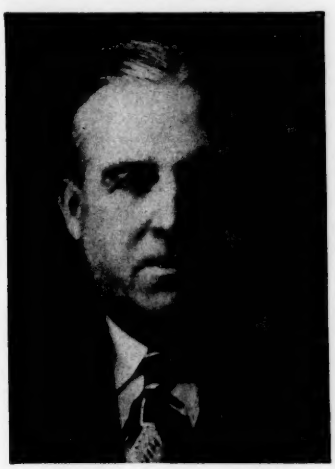
National Ice Convention Marks Centennial of Ice Business in America

TAKING a look backward to the beginning of the ice industry in America 100 years ago, then turning their eyes forward to the immediate and the more distant future, members of the National Association of Ice Industries held their thirty-second annual convention at the Commodore Hotel, New York City, November 15 to 18, 1949.

There was a good attendance of all the ice industry leaders and the program came up to the standard set by previous conventions. The subjects of training employees, merchandising ice, practical application of facts uncovered by research, advertising and publicity, and national legislation affecting the ice industry came in for discussion by specialists as well as by practical ice men.



M. J. Garvey, St. Joseph, Mo.
Retiring President
National Association of Ice Industries

The 100th anniversary was so named to observe the 100 years that have passed since Dr. John Gorrie of Appalachicola, Fla., with an ice-making machine designed by himself first made ice by mechanical means in America. This event was signalized with a fitting ceremony held Tuesday afternoon in the Century Room of the Hotel Commodore. A portrait of Dr. Gorrie was unveiled and a tribute to his memory was paid by M. J. Garvey, president and Mount Taylor, executive secretary of the National Association of Ice Industries.

One of the new features of this convention was a series of short conferences held by the Personnel Training and Marketing, the Research and Engineering, the Public Relations Departments and the Legal Counsel. These conferences were held from 9:00 to 10:00 a.m. Wednesday, Thursday and Friday and Wednesday afternoon, conducted by the Department directors who answered questions and discussed problems pertaining to their departmental work. They were well attended, a number of questions were asked, and much interest was shown.

As an adjunct of the program presented by the Public Relations Department, a display of National Ice Advertising material was on display in the Convention hall. This included advertisements in general magazines, trade

Officers and Directors
National Association of Ice Industries

President, H. O. McLain, Chicago, Ill.
First Vice-President, E. F. Condon, Los Angeles, Calif.
Second Vice-President, Wm. J. Ayers, Memphis, Tenn.
Treasurer, George Steers, Jr., Kalamazoo, Mich.
Executive Secretary, Mount Taylor, Washington, D. C.
Executive Committee: The four officers and Paul H. Andres, Oklahoma City, Okla.; R. J. Bailey, San Francisco, Calif.; P. A. Buehrman, New York, N. Y.; E. L. Gunn, Jr., Atlanta, Ga.; R. C. Muckerman, St. Louis, Mo.; J. C. Thompson, Dallas, Tex.; David J. Copeland, Richmond, Ky.; and M. J. Garvey, Jr., St. Joseph, Mo.

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Eastern: H. Stewart Dunn, Pittsburgh, Pa.
Southeastern: J. W. Keyton, Thomasville, Ga.
Southern: Roy R. Morley, West Memphis, Ark.
Southwestern: W. B. Moran, Shawnee, Okla.
Great Lakes: H. L. Dithmer, Indianapolis, Ind.
Western: J. R. Dean, Cape Girardeau, Mo.
Mountain States: Lynn Belcher, Pueblo, Colo.
Pacific Coast: M. W. Young, San Francisco, Calif.
Northwestern: F. L. Croteau, Spokane, Wash.

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magazines, grocery publications, home economics magazines; publicity articles in newspapers, general magazines and trade magazines; and advertising material for local use.

Because New York City has so many entertaining attractions the usual get-acquainted party the first evening of the Convention was not held this year. Instead, formal convention entertainment was centered on the annual dinner dance and show held in the main ballroom of the Hotel Commodore. For this event was provided a real dinner, music by a nationally known band and a floor show for which the talent was drawn from the New York entertainment world. As guests of Edw. Churchill, president of Donohue & Co., the advertising agency handling the ice advertising, several hundred members of the Convention attended a special ice show "Howdy Mr. Iceman" given at the Center Theatre, Rockefeller Center, Wednesday afternoon.

H. O. McLain, Chicago, Ill.
President
National Association of Ice Industries

All available space around the Convention Hall was filled with exhibits of ice manufacturing equipment, processing machines, supplies and ice using equipment. Many of the exhibits reflected the trend toward greater sales of prepared ice in both sized and cubed form. Automatic merchandising equipment was prominent in the displays and for the first time accessory vending machines were shown in the form of coin-in-slot machines for selling ice picks.

The usual meeting of the Unit Ice Association secretaries was held Tuesday forenoon with reports from the various secretaries and a talk by Henry P. Fowler of the United States Chamber of Commerce. This meeting is reported more fully on another page of this issue.

Opening Convention Session

THE convention was opened Tuesday afternoon by President M. J. Garvey of St. Joseph, Mo. The first formal number on the program was a dynamic introduction of the modern spirit of the ice industry under the heading, "Shoot the Works."

This was given by Thomas E. Rogers, Consumers Ice & Fuel Co., El Paso, Tex. Mr. Rogers carried on a dialogue with an off-stage voice which represented the new spirit of the new ice industry. And this new spirit, it was brought out in the dialogue, embodies active merchandising of household and commercial refrigerators, of sized ice and display of ice-using appliances, and the necessity of glamorizing ice service. The greatest name in refrigeration today, Mr. Rogers said, is "Ice", but it is necessary to tell this to the people and keep reminding them over and over again. He reminded ice men that it is necessary to keep in close touch with all their prospects and customers. They must be merchandisers and a merchandiser is one who knows how and shows how to make more money with the use of ice.

New Members

Executive secretary, Mount Taylor, reported a list of 125 companies who had applied for membership in the association during the past year, compared with 46 the year before. The board of directors had ratified these new members and upon motion from the floor of the convention their applications were accepted.

Silver Taps

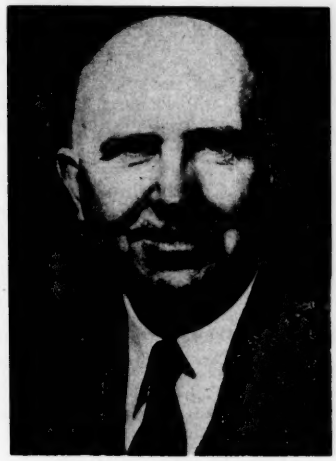
A tribute to the memory of deceased members was presented by Lee R. Girton, a past-president of the association. Mr. Girton read the list as follows:

L. A. Bailey, San Francisco, Calif.; Col. R. L. Beare, Jackson, Tenn.; Charles H. Behre, New Orleans, La.; Morris W. Bennett, Washington, D. C.; A. G. Beisenhurst, Lexington, Mo.; H. Fred Collins, Grand Rapids, Mich.; D. J. Donavan, Pontiac, Ill.; Oliver P. Fauchier, Indianapolis, Ind.; H. G. Ferguson, Fairfield, Ill.; Joseph H. Free, Dallas, Tex.; Grant M. French, Portland, Ore.; M. Errol Gordon, Waynesboro, Pa.; Leo G. Hetzler, Rochester, N. Y.; Gerhard J. Kopmeier, Milwaukee, Wis.; Charles W. Lander, San Antonio, Tex.; Earl Laughlin, Matador, Tex.; William K. Martin, Crawfordsville, Ind.; Jos. A. Martocello, Philadelphia, Pa.; Fred McCandlish, Drexel Hills, Pa.; F. S. Myers, Salinas, Calif.; C. Cicero Ogle, Cuba, Mo.; Conrad Rebman, Jr., Cincinnati, Ohio; Jules M. Record, Dallas, Tex.; A. G. Riddell, Portland, Ore.; Frank B. Robinson, Winchester, Va.; Howard W. Smith, Tiffin, Ohio; John W. Strauss, North Manchester, Ind.; R. E. Wilcox, Stockton, Calif.; John M. Wilson, Columbia, Mo.; Joseph A. Zogby, Hazleton, Pa.

E. F. Condon, Los Angeles, Calif.
First Vice-president
National Association of Ice Industries

Hello and Welcome

Members of the convention were welcomed to the city of New York by P. A. Buehrman, president of the American Ice Co., New York City. Mr. Buehrman said that in his opinion confidence is the most important element in business today and this applies especially to the ice industry. He called attention to the service and informa-



Wm. J. Ayers, Memphis, Tenn.
Second Vice-president
National Association of Ice Industries

tion provided by the National Association of Ice Industries. Through this service and the up-to-date management of ice companies, he said, we know that the ice industry is growing and its vitality is further shown by the young blood coming in and with them young ideas and visions and confidence in the future of the industry.

Treasurers Report

The report of the treasurer was presented by George Steers Jr. of Kalamazoo, Mich. Mr. Steers paid tribute to the late Wm. K. Martin who had served as treasurer of the association for 21 years. During that time, he said, each year had witnessed more money received, spent and placed in reserve. The present report he said shows the association in the best financial condition it has ever been in and a program bigger than ever before.

The report showed total receipts during the year of $167,928.61 with disbursements of $147,913.02, leaving an excess balance of $20,015.59. Total reserves as of September 30, 1947 were $293,370.76 as compared to $261,568.35 for 1948. There are no liabilities or outstanding obligations except current bills, so that the assets above represent the net worth of the association.

For the Public Relations Department, receipts during the year had been $376,051.58, and expenditures $375,265.38, leaving a balance of $786.20. Adding the previous balance, total assets are $328,980.38. In this case, also, there are no liabilities except current bills.

Regarding the future of the ice business, Mr. Steers said that at the convention would be outlined a program of modern merchandising to keep the industry in the eyes of the public. Leading ice men, he said, looked forward to 1950 with confidence but individual efforts will determine whether 1950 will be a better year than 1949.

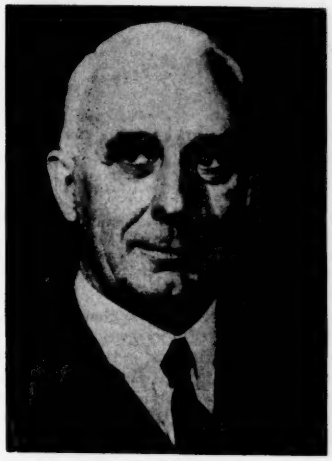
Seasoned Progress

In his annual president's address, M. J. Garvey reported that a preliminary survey indicated that ice sales had declined about 12 per cent. Studies made during the year, he said, indicated that the primary factors in the decline of sales were unfavorable weather and general economic conditions. Approximately 3 per cent of the decline was due to competition and 9 per cent to unfavorable weather. This decline in ice sales was to a considerable extent in line with decline in gross sales of many other industries, many of whom depend upon the use of ice.

Mr. Garvey also touched on many of the more pressing current problems in the ice business including the inroads of small ice-making machines. To meet this new situation, to create new markets, to explore new outlets and new sales possibilities, he enumerated some of the projects being carried on under the leadership and guidance of the National Association. This includes research projects, training programs and the publicity and advertising programs.

The decline in ice sales this year, he said, need not be discouraging because all ice men knew that it was going to be a struggle to hold the gains during the lush days of the war. They have held most of those gains for several years and he said they could hold the majority of them for a number of years to come if they would use the tools they have at hand and make every effort possible to hold their customers against all forms of competition. Mr. Garvey's address is published in full immediately following this convention report.

One of the entertaining features of this session was the introduction and crowning by Mr. Garvey of Miss Helen



Geo. Steers, Jr., Kalamazoo, Mich.
Treasurer
National Association of Ice Industries

Hagan as Centennial Ice Queen of the National Association of Ice Industries. Miss Hagan recently was selected as the 1949 sweater girl.

A Revised Timetable

A practical talk on how to conduct the ice business and how to meet some of the problems involved was given by R. J. Bailey of the Union Ice Co., San Francisco, Calif. and a past president of the association. Mr. Bailey pointed

out that the loss of tonnage during the year has created another crisis in the ice business. However in this connection he said it must be remembered that sales which increased greatly during the war must inevitably find their normal level. The peak of 54 million tons produced and sold was not natural and could not have been maintained. Back in 1925 he recalled, many leaders of the industry were convinced that the ice industry was going down and

Mount Taylor, Washington, D. C.
Executive Secretary
National Association of Ice Industries

would never recover. In that year 27 million tons of ice were sold. The same brains and thinking and planning that pulled the industry out of that slump of 1925, he said, will pull it out of this small decline of 1949.

The ice industry, he said, has survived and its growth is mostly because of ice-using equipment the industry has sold in the last twenty years and operators of ice plants and ice delivery concerns are the only ones who can sell this equipment.

Sanitation also is important and the industry must make a point of doing public service to help maintain sanitation. Many avenues also are open to improved mechanical processes.

Mr. Bailey touched briefly on modern polito-economic trends. He said that industry could no longer afford to fight the influence of unions, pension plans and other liberal ideas. His company in San Francisco, he said, had had a pension plan for their employees for twenty-five years. During that time they have had only one interruption of service because of labor difficulties and that was a conflict between two unions and now 85 per cent of their employees are union members. Regarding union domination, he said they have learned that they could not slow down a steam shovel by trying to stop it with their toes; rather let it go by, then hop on it for a ride with the idea they will eventually get hold of the steering wheel.

Meeting the Challenge

Joseph L. Gabriel of the Hollister Ice Co., Hollister, Calif., told about the opportunities offered to individuals under American democracy. He said he had come from Lebanon at the age of 13 years where the poor really had to struggle for a living. While America is still a land of opportunity, things here are changing faster than most people think and it is the responsibility of capable men to maintain American political and business institutions, but to meet this challenge, they would have to learn to be less selfish and be more sympathetic to the needs and desires of other citizens in general.

As ice executives he said their responsibility is to so conduct business that it will be successful from the standpoint of employees, customers and owners. As loyal citizens they cannot shirk these responsibilities. The future of America and American institutions will depend on its citizens of tomorrow, and democracy, like a clock, has to be rewound occasionally. Upon ice men falls the duty to build more harmony between competitors. The relation between employers and employees today, he said, is more serious than it has ever been before and this can only be handled through realization of its responsibilities and opportunities by management.

Second Convention Session

THE Wednesday morning session was opened by Harold O. McLain, first vice-president. This session was devoted largely to merchandising, covering processed ice, vending stations and other outlets for the sale of ice.

Processed Ice and Consumer Acceptance

The preparation of processed ice for consumer acceptance was discussed by P. J. Mastin, People's Co., Syracuse, N. Y. Mr. Mastin pointed out that if they were to compete successfully with other refrigerating devices on the market, they must meet the requirements of customers and make ice, in the form required by the customers, easily available. This attitude, he said, is especially significant in these days of declining sales. His company started sizing ice and selling ice cubes in 1928 and the sales of sized ice particularly have shown a constant increase.

In making and selling sized ice, he said, we are riding with the trend so we should keep going. He criticized a tendency to furnish sized ice in too many sizes, expressing the opinion that three sizes, ranging from small to large pieces, would meet all practical needs. He also suggested the adoption of descriptive names for each size and some degree of uniformity in this respect throughout the industry. His company, he said, had done much experimental work with packaging sized ice and they had found a one-trip paper bag best suited because it is easily handled and completely sanitary. The additional cost of these containers, he said, is willingly absorbed by the customers.

Ice for Dressed Poultry

A new market for ice, for use with dressed poultry was discussed by W. C. Glennon of Swift & Co., Chicago. Mr. Glennon opened his talk with a short historical background of the American poultry industry, touching on the surplus of poultry during the summer which led to freezing poultry to make it available during low production months. Modern developments of poultry packing, he said, call for processing in ice to remove the body heat quickly and advocating to retailers that the chicken be displayed in ice.

Ice prevents shrinkage, he continued. Poultry displayed in a mechanically refrigerated display case will shrink up to 11 per cent in three days according to a University of Oregon, Extension Survey experiment. Ice prevents the chicken from drying out and helps to protect the natural bloom, and aids in retaining the natural juiciness. Ice is a splendid merchandising agent. Retail dealers are reminded that fish has been satisfactorily displayed in ice for many years, also of the successful joint efforts of the

fruit and vegetable industry and the National Association of Ice Industries in advocating the display of those products on ice. So, as a natural humidifier, "The ice has it".

Mr. Glennon then described the three year advertising program of Swift & Co. to promote the "chicken on ice" theme among poultry retailers. In closing he said Swift's Commercial Research Department estimates that more than one billion pounds of commercially raised broilers and fryers has been raised in the United States during 1949. It takes about one pound of ice per pound of chicken for the processing and about the same amount of ice for the merchandising of the chicken, therefore the ice industry had a potential market this year of two billion pounds (a million tons) of virtually new ice sales. "We of the poultry industry would like to get that up several per cent during the next decade and we are going to need the help of the ice industry," he concluded.

Rich Pay Dirt in Your Own Yard

Discussing the subject "Rich Pay Dirt in Your Own Yard," Leonard L. Swartz, Indianapolis, Ind., said that more and more they were facing competition from mechanical refrigerators and ice makers and this competition will continue, which makes it necessary for the ice industry to continue research and exploring new markets for ice. Ice men who go after markets calling for new uses of ice will get more business.

In this connection he called attention to the icing of sweet corn which had been developed in Indiana, based on the work of the National Research Department. Other possibilities are selling ice to mechanical owners. A comprehensive survey conducted by the National Research Department, he said, showed that a large number of mechanical refrigerator owners buy ice and most of them buy from outlets from which they must carry the ice home. It further showed that these mechanical owners do not use ice regularly but only for special occasions such as illness, for making ice cream and for entertaining. Although this volume is small and purchases are infrequent, this survey showed that total sales were large. It showed also that use of ice chests for auxiliary ice is rather small among household owners, the ice being purchased for immediate use.

Regarding outlets for sized ice, only about one-fourth of them are interested in delivery service while the balance designated outlets which would require hauling their ice home. Conclusion of this part of the survey indicates that outlets in shopping centers would be overwhelmingly favored.

Regarding the package, most of them prefer paper bags. Preferences showed cubes ranked first, crushed ice second, and sized ice third. The 10- and 25-lb. packages are favored over all others. Mr. Swartz concluded his paper with the comment that if ice were made as readily available as other food products, sold in the forms the public wants and in surroundings which are acceptable to the buyer, the increased sales of ice would astound all ice distributors. The public is not going to drive down across the railroad track to buy ice in the quantity we want to sell it but if we will put it on Main Street where it will be convenient for customers and offer it in clean well-kept facilities and packages, millions of customers will buy and pay a fancy price for ice in this form, he said.

Vending Stations for Ice Distribution

"Key Factors in the Application of Vending Stations in Ice Distribution" was discussed by Millard W. Young of San Francisco. Mr. Young pointed out that his company and others in California had been using vending stations for many years for selling ice and through this medium a large tonnage had been and was continuing to be sold. This method, he said, will sell ice to customers not reached through other channels. It makes it easy and convenient for them to buy ice.

In regard to locating stations, he said he knew of no established rule except that they should be in or near shopping centers. Their experience he said showed that vending stations would not reduce route tonnage because people on ice routes, whether domestic or commercial customers, were accustomed to buying from the delivery man and their buying habits were pretty well fixed.

Miss Helen Hazen, beautiful Conover model, is crowned Miss Ice Centennial at the Annual Convention of the National Association of Ice Industries. Mike Garvey, National Ice President, was delegated the duty of placing a Crown of ice on her head at the opening session of the convention.

In establishing such stations, his company prefers to lease the station to an operator who buys the ice at the established rate and pays $1.50 per ton for the use of the vender. Where they cannot find an operator the vender is operated by the company, being serviced by the regular delivery man on whose route the station is placed. However their experience had shown that the stations leased and operated by the individual sell more ice, are more profitable and more desirable in every way.

The Ice Industry

F. W. Beazley of the Atlantic Co., Atlanta, Ga., discussed the subject, "The Ice Industry—past, present and future." Mr. Beazley told about developments in the industry since 1890 when the manufacture of ice first began to take the place of natural ice harvested from ponds and rivers. When mechanical refrigerator competition began to hit the ice industry hard, many ice men of that time were fearful for their future. But all ice companies who started at that time doing a good management and merchandising job have had entirely satisfactory financial operations. The

same held true during the depression period preceding the war. Later the war brought new problems and these for the most part were met on a satisfactory basis. These and other happenings from the time the ice industry first started until the present, shows clearly that the industry is what the men engaged in it, make of it.

Mr. Beazley recalled that ice sales reflected economic conditions and the weather. During 1948 consumer buying power was down. During 1949 consumer buying power was up slightly but the weather was unfavorable. In 1950, he said, sales will depend very largely upon the extent to which ice men keep up with the times.

Third Convention Session

THE third session was opened by E. F. Condon of the Southern Counties Ice Co., Los Angeles, Calif., second vice-president of the association.

The report of the nominating committee, nominating directors of the association was presented by V. V. Ogburn of San Francisco. The divisional presidents and directors at large, nominated and elected, are listed on the first page of this convention report.

The Controlling Factor in Holding Ice Customers

An important subject to the ice industry of today "The Controlling Factor in Holding Ice Customers" was presented by Harold Clotfelter of Rome, Ga. Mr. Clotfelter emphasized the importance of the ice industry doing a better job of serving customers. The trend of ice sales in the next few years, he said, will depend very largely on your own efforts and this, in turn, will rest upon the amount of effort made to train employees in selling. As a practical example, Mr. Clotfelter told about the program of employee training used by his company.

In this program, employee meetings are held the year around, meeting one evening a week with a definite program prepared beforehand, based largely upon material issued by the National Association. Use is made of a bulletin board with posters on good ice service, newspaper and magazine advertisements and other material of interest to the employees. An important part of this training, he said, is the plant manager who needs the personality and the ability to encourage the employees to do a good job.

Regarding the future of the ice business, Mr. Clotfelter said that no industry depending upon sales direct to the public will succeed that doesn't provide good service. The ice business is not providing such service in an adequate manner. Most ice distributors, he said, should be ashamed of the service and merchandising jobs they are doing. The industry cannot be assured of a profitable future unless it uses modern methods aimed at providing good service to ice customers. It must do the job in merchandising and service that the product and the industry deserves.

You Got to Follow Through

Under the subject "You Got to Follow Through" Edwin Lowenthal of Evansville, Ind., discussed local advertising in the ice industry.

The three principal media of local advertising he said, are direct mail, newspaper and radio. One of the faults of direct mail is that it often is not read and the problem here is to make mailing pieces so attractive that they will be read. Newspapers are good advertising mediums and are successful in creating public acceptance. In this connection, the material furnished by the National Public Relations Department is very valuable, he said, but it must be localized. Radio advertising is successful if attention can be drawn of people who are potential ice customers. A secondary value of radio advertising is that it helps discount competitive propaganda and aids in selling employees on the standing of the company they work for.

Advertising on the local level, he said, is necessary. National ice advertising alone will not do a complete job, in part because ice and ice appliances have diversified uses and non-uniform price scales throughout the country. The basic need for an adequate local advertising program is attractive show rooms, attractive delivery equipment with truck banners, displays of ice at such places as food and home shows and a program of advertising through direct mail, newspaper and radio advertising.

Value for Your Public Relations Dollar

A report by the operating committee of the Public Relations Department was presented by E. L. Gunn, Jr., chairman of the operating committee of Atlanta, Ga. Mr. Gunn said the members of the Operating Committee and staff of the advertising and Public Relations Department feel that the ice industry received greater value for its public relation dollar during 1949 than at any time since the program had been reorganized. The finance committee, he said, had been hard at work to raise a substantial fund for the 100th anniversary campaign. He then presented a review of the 1949 activities, with detailed figures on the amount of money received and spent and itemized expenditures. The report is published on another page of this issue.

Behind the Scenes

The 1950 advertising and publicity campaign was presented by members of the Donahue & Coe Advertising Agency, directed by Edward Churchill of that organization. Introduction of this phase of the program told how an advertising agency functions and how the ice advertising program was built. Enlarged screen reproductions of the magazine advertisements, booklets, films and other material were shown.

The campaign, it was explained, will be built largely on the results uncovered by the Research Department of the National Ice Association. Advertising pointed to the commercial field through grocery publications and other trade publications will be continued. The domestic field will be covered through home economics magazines and in addition through special general magazine advertising in the spring and early summer. Reproductions of a series of magazine advertisements were shown featuring ice for home use, beverage cooling, for table use, iced vegetables and picnic chests.

An important phase of this year's campaign will be local advertising. It was emphasized again that national advertising must be backed up and localized through local advertising. For this a full set of tools, including newspaper mats, electros and copy will be provided. Local advertising, it was stated, is woefully inadequate and in that one respect ice advertising has been a failure.

Progress of the Campaign

As chairman of the Finance Committee of The Public Relations Department, David J. Copeland presented a report on the progress of the campaign for funds for the 1950 advertising.

After reviewing events from 1947 when nine big companies promised to match dollar for dollar all other amounts subscribed up to $500,000, Mr. Copeland announced that advance subscriptions for 1950 totaled $306,-

743, to which had been added additional subscriptions, bringing the total to date of approximately $383,000. He then presented an honor roll of advance subscribers to the convention and announced the new honor roll certificates which have been awarded to all advance subscribers. An additional "3 cents per ton" souvenir will be awarded to all subscribers to the 100th anniversary campaign.

Extension Course on Ice Marketing

At this session, Paul H. Andres, chairman of the Personnel Training and Marketing Department announced that plans had been formulated to provide an extension course of the Ice Marketing Institute. The text of this course which is to be offered for the use of unit ice associations and other groups has been approved. This course has been prepared for employees of ice companies in a short course lasting one week. Mr. Andres stated that the Ice Marketing Institute will be continued in Washington and that this new short course was intended to supplement it by providing the instruction for employees of those companies who do not want to go to the expense of sending their employees to Washington.

Ice Merchandising Forum

THE Thursday afternoon session was given over to a National ice merchandising forum in which means and methods of selling both ice and ice-appliances were discussed. The session was opened by Paul H. Andres, chairman of the Personnel Training and Marketing Department and R. W. Davis of the Union Ice Co., San Francisco, Calif., presided as moderator. Mr. Andres in his introductory remarks pointed out that an adequate merchandising program requires four things: a quality product, a product made easily available, an adequate advertising program, and merchandising at the point of sale.

Charles E. Dearing of the Metropolitan Ice Co., Somerville, Mass., described a cotton bag used as a container for ice used by dairy companies for bottled milk. In three years of experiments by his company, Mr. Dearing said this had been developed as their standard method of cooling milk. During the past year, he said, 11,500 tons of ice had been sold in this form to dairies. These bags, he said, are durable and can be used many times.

W. C. Glennon of Swift & Company, who presented a paper at the Wednesday session on ice for processed poultry, gave a short talk suggesting how ice companies can tie in with Swift's program of icing poultry. Processed poultry, he said, is a big item, probably bigger than most people realize. It represents about one-third of Swift & Company's sales volume. Their greatest difficulty has been in selling poultry dealers on the use of ice and it is in this work that ice companies can render a real service by providing ice in the form desired and make it easy for the dealers to obtain.

P. J. Mastin of the Peoples Ice Co., Syracuse, N. Y., also was on the Wednesday program with a paper on "Preparing Processed Ice for Customers." He recalled that when crushed ice first came on the market some years ago, his company started pushing sized ice for meats. At first some difficulties were met in providing ice in the size wanted. In their market, Mondays and Thursdays are busy days for local meat markets and on those days a special effort is made to provide ice in the form and quantity desired. The delivery man delivers the ice to the trays in these markets and the customer takes it from there. An advantage of sized ice for this use is that it protects meat from drying out and helps to retain its appearance. The average meat market, he said, will use 75 to 85 lbs. per foot of display case per week.

Francis J. Henneberger of the Henneberger Ice & Cold Storage Co., Princeton, Ind., gave an interesting talk on "Combating Automatic Ice Makers." This, he said, is one of the most pressing current problems of the ice industry and as a means of meeting it, he suggested that the ice company publicize their product and get their customers and prospects to know the advantages of ice refrigeration. Manufactured ice, he said, is a far better product than that made by the ice making machines. Water from which it is made is purified while city water used by the ice machines may be full of impurities. It is delivered to customers without the mess and bother of manufacturing on the premises and over an extended period, counting cost of the machine, depreciation, labor, and other items of expense, it can be shown that there is little difference in cost between the two services.

J. H. McGill of the City Ice Delivery Co., Chartlotte, N. C., gave a talk on selling domestic refrigerators. It is a fact, he said, that ice must have a container and these containers for domestic refrigeration are sold only by ice companies. Equipment sales of his company last year, Mr. McGill said, amounted to about $28,000 mostly of domestic refrigerators. They also sold a considerable number of ice cream freezers. One of the essentials in such a program, he said, is trained sales personnel. His company starts a training program about March 1 for all employees. They offer special prizes in addition to commissions and during the year they hold sales contests for which prizes are awarded. To encourage the employees who are not able to make sales, special contests are devised for them alone.

Leonard S. Byron of the Southern New England Ice Co., New Haven, Conn., discussed sales and installation of commercial equipment. His company, Mr. Byron said, had made a special effort to cater to dairy companies which are large users of ice in that territory. As a part of their service, they had produced a milk crate the same size as the standard crate but with a perforated bottom, adapted for icing by hand or with ice slinger. Mr. Byron displayed a sample crate but explained that it was still in the experimental stage and that they had no data as to its performance but they hoped to be able to interest their dairy customers in volume purchases.

R. W. Davis of the Union Ice Co., San Francisco, Calif., described his company's sales plan. The Union Ice Co. decided many years ago that a planned effort to sell domestic and commercial refrigerators is necessary because practically no one will buy a refrigerator of his or her own accord. As an aid in placing domestic refrigerators in homes they have devised a rental plan under which a refrigerator will be placed in a home and kept fully iced for thirty days at a cost of $5.00, $2.00 of which is for rental and $3.00 for the use of the ice. This arrangement will be continued as long as the customer desires the service. At any time later, 80 per cent of the money paid for rental will be credited on the purchase price of the refrigerator. This, he said, has resulted in installation of a considerable number of domestic refrigerators. The company also is renting commercial equipment including vegetable counters. One such plan is to charge a flat rental of $5.00 upon delivery and $5.00 a month with the monthly rental charges applied on the purchase price, which means that the counter will be paid for in about three years.

In a discussion following this talk, Bert Staples of Toronto, Canada, volunteered the information that in his city the sales manager of the ice company had contacted department and furniture stores and arranged to give salesmen of the stores instructions on operation of ice refrigerators. Most of these sales people, he said, know nothing about the construction or operating details of an ice re-

frigerator and this instruction had proven very valuable in helping them to sell the refrigerators.

Paul H. Andres outlined briefly a local ice merchandising plan for 1950 which had been approved by the Personnel Training and Marketing Department of the National Association. A sum of money had been appropriated and used for the purpose of preparing point of sales material adaptable to all ice companies at the local level. Mr. Andres then displayed tentative samples of some of this material including Delco signs, counters, wall cards, clip-ons for menus of iced food and a menu card with an ice advertisement on the outside, and others. Mr. Andres stated that this was in a tentative form but that it would be finished and full details would be furnished to all members of the association.

R. W. Davis advanced the idea of a sales contest on a National basis. Mr. Davis said this plan had been used successfully by many ice companies, both large and small, to increase sales of ice-using equipment and he advanced the idea that such a contest on a national basis would undoubtedly result in greatly increased sales of such equipment. He said this plan was now in a tentative form ready for discussion.

A scoring system of all employees on the basis of their opportunity to sell would be set up and ice companies would be placed in different classifications according to their size. Entry fees from participating companies would range from $5.00 to $12.50, charged to provide a fund for prizes and other expenses. Prizes for each division, possibly each unit association or state, and National prizes would be provided.

Mr. Davis said the committee wanted to get expressions of opinion from those engaged in ice sales work and when these had all been received and analyzed, the present idea is to complete the plans and issue a bulletin. Tentative acceptance blanks were passed out and following the meeting Mr. Davis collected a considerable number of these indicating interest in the project.

E. F. Condon of Los Angeles called attention briefly to another ice merchandising project in which he suggested that ice companies follow the custom set by movie theatres presenting displays of films shown in their marquees. Ice companies, he said, could use display banners on their trucks and in windows of show rooms on special days such as Memorial Day and Fourth of July, with seasonal selling appeals. This plan, he said had been tried in California and other places and has been very successful.

Final Convention Session

THE closing session of the convention held Friday forenoon was conducted by President Garvey. This session was devoted largely to a discussion of the new Wage Hour Law and its effect on the ice industry.

A nominating committee for 1950 was presented, as appointed by the president with the approval of the board of directors, as follows: Fred Beazley, Jr., Dallas, Tex.; Glen H. Genger, Chicago, Ill.; Thomas E. Rogers, El Paso, Tex.; Harold Hacke, San Francisco, Calif.; Charles Silbert, New York, N. Y.; E. S. Mulley, Kansas City, Mo.; Lewis H. Powell, Raleigh, N. C.

Government in Business

A discussion of the problems of government in business with special attention to the provisions of the new Wage Hour Law was presented by Raymond S. Smethurst of Washington, D. C. During the coming few months, Mr. Smethurst said, all business concerns will be confronted with important business decisions and much of this will be regarding the new Wage Hour Law. To know whether they are covered by any provisions a complete understanding of the law and how it applies is necessary. If a company decides it is not covered and later finds that it is, serious consequences will result.

In considering the effect of this law, the speaker said, ice companies must ask themselves whether they are covered in any respect, through providing goods for interstate commerce. He then explained the exemptions set up by this law for retail establishments. These provisions are covered in the report of Wm. T. Jobe, legal counsel of the National Association in another article in this issue.

Mr. Smethurst called attention to the fact that welfare legislation is always a political question and policies are established by members of Congress during political campaigns. Therefore business interests, if they want to protect themselves against unfair and bothersome legislation, must exert their influence with members of Congress and in order to do this effectively, they will have to take an active part in political campaigns.

Panel Discussion

Following this very excellent presentation by Mr. Smethurst, a panel discussion of the Wage Hour Act was conducted with Wm. T. Jobe, legal counsel, acting as moderator and submitting questions to the following members of the panel: Mr. Smethurst, Charles L. Henry, Atlanta, Ga.; Reginald L. Vaughn, San Francisco, Calif., and General P. A. Weatherred, Dallas, Tex.

Preceding his presentation of the panel members, Mr. Jobe said members of the industry must firmly fix in their minds that this law pertains only to interstate commerce and so if the business done is strictly in the state and if none of the product enter interstate commerce, the company is not covered by the provisions of the law. If in doubt, however, they should study the law, especially the exemption provision.

He then presented questions submitted by the audience to members of the panel. Again it was emphasized that it is important to ascertain whether any goods sold entered into interstate commerce and ramifications of this question cause complications which may be bothersome to many ice companies who may be on or near the border line.

Basic Relations Between Costs And Price Structures

A very thorough and complete analysis of basic relations between costs and price structures was presented by Paul H. Andres of the Southwestern Ice & Dairy Products Co., Oklahoma City, Okla. Mr. Andres explained that for some years before entering the ice industry he was a public accountant and in this connection had developed accounting systems for various lines of business including large and small ice companies.

Because the ice industry has different sized companies, running from very small to very large concerns, it is difficult to apply accounting procedure that will fit them all, but they do need a simplified accounting system, taking into account basic costs. Mr. Andres then showed a chart based upon studies made in his own company showing costs and selling price, the costs broken down into general administration, selling and delivery, costs of sales, average selling price, etc. Another chart analyzed ice sales broken down into resale, delivery, vending, etc. Another showed an operating statement with all items of revenue and expenses. A series of graphs presented sales in tons per year and costs.

An analysis of these statistics, Mr. Andres said, shows that selling price closely follows cost. Since costs are in-

creasing, in order to maintain profits, prices have had to go up accordingly. But to keep prices and costs in their required relative position, the manager needs to determine the business situation in advance. The basic principle of any plan in maintaining business on a profitable basis is that price structures must be based on costs. The procedure then is to take the operating results of an average plant and apply it to others.

The first step is to get data on sales from dock and delivery men, vending stations and other ice sales outlets. An operating statement then will show sales and expenses, with fixed and variable expenses itemized. From these compilations and charts can be ascertained an adequate selling price and upon this hinges the question as to whether it is more feasible to increase prices or reduce costs. Mr. Andres' paper will be published in full in a later issue of ICE AND REFRIGERATION.

Building Your Company Organization For Future Progress

Frank F. Gilmore, associate professor of the Harvard School of Business Administration, Boston, Mass., gave a timely discussion of "Building Your Company Organization for Future Progress."

Ice companies, he said, have a training program for their selling personnel, but they also should have special training for executive training and responsibilities. Studies have shown that the accounting department should have a voice in management since it can show statistics of value. But the accountant should also be trained in management so he will know what figures management needs. Special training of junior executives also is needed to replace vacancies caused by death or retirement.

For training executives, on the job training is the best, supplemented by management training programs given by universities and trade associations. Subordinates should be given opportunity to perform executive duties and to be given executive responsibilities but they can also learn by observation. Duties of the subordinates should be extended beyond the little niche in which they work.

Concluding Details

A brief report of the newly elected board of directors was presented by Mr. Garvey which included list of new officers and directors as listed on the first page of this report.

Mr. Garvey expressed his satisfaction that Harold L. McLain, advanced from first vice-president to president, had agreed to accept the responsibility of this important position. Mr. McLain he said is thoroughly capable and he was sure that the affairs of the association would be in good hands under his direction.

(Continued on page 69)

Ice Industry Honors Dr. John Gorrie at Celebration of 100th Anniversary of Ice Making in America

A PORTRAIT of Dr. John Gorrie, inventor of America's first ice-making machine was unveiled Tuesday afternoon, Nov. 15, at the 100th anniversary celebration of the National Association of Ice Industries held in the Century Room of the Commodore Hotel.

Dr. Gorrie, one hundred years ago, struggled to perfect an ice-making machine that would assure cool comfort for the hospital rooms of patients suffering from yellow fever and malaria. "Today, ice manufacturing plays a behind-the-scenes role in providing comforts and conveniences for all America," said M. J. Garvey, president of the National Association of Ice Industries.

"New York's theatres in summer, the great Carnegie Hall and others, are ice-conditioned. Ice cools the trains in which we travel, safeguards the shipping of perishable foods, makes possible the year-round marketing of produce, dairy products and fish. From life-saving ice surgery to modern transportation of perishable foods, the modern ice industry has an essential role in America," stated Mr. Garvey.

Nearly a hundred modern uses of ice were on display at the anniversary party. An old-fashioned picnic, complete even to the barbecuing of frankfurters, was a surprise feature. Glamour-icing food is what the ice industry calls the spectacular, glistening garnishes that were shown. Sparkling punch bowls were cut from blocks of ice. The buffet was a miniature glacier. From chilled cocktail to the hundred candle birthday cake, it was an ice party.

Uses of ice shown in actual displays and in a gallery of photographs included the hydro-cooling of fruit and vegetable crops, icing of refrigerator cars and trucks, ice-packing of perishable greens, iced marketing of poultry, fish and produce, and modern ice-making equipment.

The portrait of Dr. Gorrie was unveiled at an elaborate press party in which Dr. Henry A. Halle, regional medical director of the U. S. Public Health Service and officials of the National Association of Ice Industries participated. A brief summary of the life of the inventor was given by Francis X. Timmons, publicity and advertising director of the Ice association and Mount Taylor, executive secretary spoke briefly on the extensive uses of ice today.

Portrait of Dr. John Gorrie, inventor of the first American ice-making machine, is unveiled at press party at National Ice convention. Dr. Henry A. Halle, regional medical director of the U. S. Public Health Service, officiates at the unveiling.

Seasoned Progress—President's Report to Ice Industry at Annual Convention

By M. J. Garvey
President National Association of Ice Industries

THERE is little of news value in the statement that this has been a very unsatisfactory year for the ice industry. The fact is well known to nearly everyone in the ice business. The only reason for injecting it here is to use it as a starting point from which to develop an analysis and evaluation of indicated trends in the industry.

Ice sales declined sharply this year. Our preliminary survey as of October 1 indicates the extent of the decline will be about 12 per cent. It also indicates that the decline in ice company profits will be even more disappointing, since this 12 per cent represents the cream from the top. It has been a very adverse year for ice companies.

Now let's be realistic. What is the projected significance of that decline? Does it mean that the ice business is headed for the rocks? That is, is entering the twilight zone of its existence? A considerable number of ice company executives seem disposed to that view, and no unbiased analysis of the situation can ignore or discount that view. Certainly no one with vested interests in the ice business wants to be misled by over-optimistic or wishful thinking.

So, let's look at the facts—coldly, impersonally and analytically. What is the true significance or meaning of the declines in the sales this year and last? What was the reason for that decline? Where did the business go? Did it disappear temporarily due to economic conditions or did it go to competitive forms of ice service? To what extent did the development of new ice tonnage offset the losses to other forms of refrigeration and, based on the experience of pioneers in those new markets, what are the potentialities there?

These are questions of vital concern to everyone in the ice business. Let's examine them objectively.

First, where was the decline in volume this year lost? Did this tonnage cease to exist or was it captured by other forms of refrigeration? In other words, was the decline due to natural causes or to general economic and unfavorable weather conditions, or to the inroads of mechanical competition, or to both? And if both, in what proportions?

These are vital questions. For weather and economic conditions are variable factors which fluctuate from year to year, but average up on a fairly even basis over a reasonable period of time. Losses to other forms of refrigeration, however, are cumulative and can be offset only through development of compensating tonnage in present and new market outlets.

Our studies during the year indicate that the primary factor in the decline in tonnage this year was general economic and weather conditions. By primary, I mean 75 or, 80 per cent. Sure—ice sales were down 12 per cent this year. So what! Gross sales in many other industries were down that much, and in some, much more. And most of them were industries in which there is no "competing forms" of services or commodities.

Sales of the tavern and restaurant industries, two of our best customers, were down far more than ours. Sales in the meat machinery industry, for example, where there is no competing industry, were down more than 30 per cent, while sales of our ice refrigerator manufacturing industry were down only 11 per cent.

Tonnage Loss to Other Forms of Refrigeration

It is well known of course, that a substantial amount of ice tonnage has been lost to other forms of refrigeration this year, mechanical home refrigerators and small, point-of-use, ice making machines. But the known facts also indicate that the effect of this competition has been greatly over-estimated. Ice companies have seen their tonnage decrease sharply and the sale of mechanical refrigerators increase in their market areas, and they have naturally concluded that all or most of their loss in tonnage was due to that fact and assumed that this loss was permanent.

Now, let's analyze that situation. Reports of the mechanical refrigerator industry show that approximately 3,500,000 mechanical refrigerators have been or will be sold this year. Of that number, at least 2,000,000 were replacements (8 per cent of the 25,000,000 in use) leaving 1,500,000 units which either replaced ice refrigerators or went into new homes completed during the year. Approximately 900,000 units went into the 1,000,000 new homes or dwelling units built during the year. That leaves about 600,000 that actually replaced existing ice refrigerators during the year.

Now, these 600,000 units were not all sold at the beginning of the year. Most of them were sold during the summer months replacing ice refrigerators that had already been using the ice part of the year. But, assuming that every one of them replaced a 4,000-lbs.-per-year ice customer, the total tonnage lost through that development will be only 1,200,000 tons.

We do not know how many small ice cube making machines were sold this year, but based on reports from ice companies throughout the country, we believe that 2,000 units would be a liberal estimate. These, too, were sold during and not at the beginning of the year. Assuming, however, that each unit sold replaced an average of 200 pounds of ice business per day, 365 days in the year, the total loss through that channel was only 73,000 tons.

The same thing is true with respect to the sales of flake ice machines. We do not know exactly how many of them were sold to former ice users or what the capacities of them were. We do know that a substantial number of them were sold to concerns who were only potential ice customers; people who did not buy any ice in 1948, new business etsablishments and for ice to be used in new operations of existing establishments. Based on the information available, however, I believe a conservative estimate would be that not more than 75,000 tons of our 1948 ice business were lost through this channel during the year.

In like manner, it may be conservatively estimated that sales of mechanical refrigeration in the commercial field this year replaced not more than 30,000 tons. Most sales of such equipment were for replacement of existing equipment or for new business establishments.

So, when we put all the figures together, we find that 1,378,000 tons or less than 3 per cent of the total 1948 ice sales were lost to other forms of refrigeration this year. The total decline this year will be about 6,000,000 tons or 12 per cent. So the loss due to the sale of other forms of refrigeration was only 23 per cent of the total decline. The other 77 per cent was due to other causes, probably weather and economic conditions.

That deduction is also supported by the fact that in those areas where weather conditions have been favorable this year, the decline in sales will be only 4 or, 5 per cent, while in other areas, where ice companies have been equally as aggressive in merchandising but where weather conditions have been exceptionally bad, the decline this year will be as much as 25 per cent.

My purpose in pointing out these facts is not to minimize the seriousness of the inroads of other forms of re-

frigeration on our industry's tonnage. It was and is serious, deadly serious, but the inroads this year were not the major factor in the decline in ice sales this year. Less than 3 per cent of our normal tonnage loss was due to mechanical competition.

But that 3 per cent decline, that 1,423,000 tons of lost business is cumulative. If it is repeated next year without corrective additional business in new ice tonnage, the total may well be 6 per cent. And if it is repeated again in 1951 and again in 1952 and so on, the effects eventually will be fatal unless—unless the industry does something about it, unless we do two things: first, take vigorous steps to reduce it, to retard the inroads of other forms of refrigeration, to hold the loss in that field to the absolute minimum and, more important, unless we take more vigorous steps, much more vigorous steps—to replace that lost tonnage with additional tonnage in new fields.

New Ice Tonnage

And that is the reason for all of this narration. There are rich fields for development of new ice tonnage for ice companies. No one of them is spectacular. Practical development of them average in the range of from 1 to 5 per cent per year of present tonnage, vegetable display icing, processed ice sales to mechanical refrigerator owners, hydro-cooling ice for local produce growers, truck icing, automatic vending stations, etc., etc. No single one of them will produce spectacular increases. But they all add up, and they are cumulative. If developed with reasonable diligence, they may well offset the unpreventable losses to other forms of refrigeration.

Let's look at a typical case: In a meeting of representative ice company executives recently, the question of possibilities in the field of retail vegetable display icing was being discussed. Critical questioning of one enthusiastic advocate of developing this new market brought out the fact that although his company had been very active in the promotion of vegetable icing during the preceding year, the new tonnage gained in that field amounted to only about 1.2 per cent of the company's total normal ice sales. On first thought, that seemed like an insignificantly small amount of tonnage.

And yet that 1.2 per cent addition of new tonnage was vitally important. It represented a substantial replacement of the company's losses to other forms of refrigeration that year. Development of new tonnage in one or two other fields, sales of processed ice to mechanical refrigerator owners, ice for hydrocooling, could easily amount to 4 or 5 per cent, and more than off-setting the losses to other forms of refrigeration. When that is done, the company's annual tonnage may fluctuate from year to year, depending on weather and economic conditions, but its normal or average tonnage will be sustained or increased.

All of which means just this: ice company sales normally fluctuate up or down each year anywhere from a fraction to as much as 20 per cent. Most of this is due to weather and economic conditions which correct themselves over the years, but a small per cent is due to the inroads of other forms of refrigeration. It is this small per cent that is dangerous because it is cumulative. It is this small per cent that must be offset by sales in new fields if our total tonnage is to remain normal or grow.

Research Projects

Therefore, what is the National Association doing to create new markets, to explore new outlets, and to develop new sales possibilities. Well, I will enumerate for you here, some of the projects being carried on for the benefit of the industry under the leadership and guidance of a member of our staff, our very able and aggressive director of research and engineering, C. P. Austin, whose activities are also supervised by an industry committee.

Any one or two of the projects I am about to mention could produce tonnage enough to offset the 3 per cent cumulative loss of sales, which I mentioned several minutes ago.

First there is the projects in the Colleges.

Icing of Vegetables Which are Grown and Consumed Locally: With the cooperation of the New England Association in 1947 and 48 we sponsored work at the University of Massachusetts. The purpose of this study was to search for new and better methods of using ice in the marketing of vegetables which are grown and consumed locally.

When we went into this field, some were skeptical, including the growers and the grocers. They felt that improved handling was unnecessary for produce which can be delivered to market in a day or two. We now have proof that this field has great potential possibilities. This year the first big concentrated commercial deal based on better handling of local produce through use of ice was successfully undertaken.

The Winston-Newell Company of Minneapolis, a large and progressive food wholesaler, worked with growers and grocers in that area to get them to remove the field heat by an ice water bath. Following this, the produce was iced all the way from grower to consumer to protect its quality. Asparagus, beans, beets, cabbage, carrots, corn, lettuce, green onions, radishes, spinach and tomatoes were hydracooled and iced. Sales boomed! The average increase over the previous year was 271 per cent. The program was a big success and is to be expanded next year.

Hydracooling of Peaches: In September, tests were completed on the study at Michigan State which was undertaken last year on the possible value of steri-cooling peaches to control brown rot. This work was sponsored jointly by the Food Machinery Corporation, manufacttures of the Stericooler, the Michigan Association, and the National. A full report on last year's work will appear in ICE AND REFRIGERATION.

Sanitation of Beverage Coolers: Our Research Committee felt that because of the interest manifested by the members, we should undertake a study of the sanitation of beverage chests, particularly to determine how the icing of bottled beverages compares with the wet and dry mechanical coolers. This work was sponsored at Michigan State College under the direction of Dr. W. L. Mallmann, who is well known for his work in bacteriology and health. He compared bacteric counts of iced units with and without a water level with wet and dry mechanical units. The work is finished and the report should be in our hands within the next few weeks. We have seen part of the data and we are confident you will like the results.

Methods of Handling Produce in Retail Stores: Last year the National Association cooperated with the icemen of Baltimore and the University of Maryland in a study of vegetable handling methods. The work has been completed and the person who is preparing the summary is using the material for a Ph. D. thesis at Cornell. Our best estimate indicates that the report will be available sometime after the first of the year.

Iced Methods as Compared to Other Methods of Handling Vegetables: As a follow-up on the project which we had at Purdue last year for the purpose of comparing the ice method with other methods of displaying fresh vegetabes, we are still cashing in on this work.

Mr. Oesterle, who conducted the study, is still continuing to tour the State of Indiana holding training schools for produce people. This training program has added much to his prestige and consequently made the work which he did for us even more valuable and more widely read and accepted.

Icing of Corn: This year the National Association and the Indiana Association sponsored a corn icing project at Purdue. This turned out to be a very excellent study. It involved working with sweet corn growers and icemen in the icing of sweet corn destined for local markets. Although we have worked in this field before, in Indiana we got more into the commerctial aspects of the problem. I am confident the Indiana people would agree that this was a most successful project. This one field, the icing of sweet corn, could mean a market for tremendous tonnage if all of the extension people in the various states fully appreciated its value and carried the story to the growers, grocers and consumers.

There are no short cuts to this ice business. The people in the states are going to have to become interested in it. Certainly one of the best ways to create spontaneous enthusiasm is to encourage state people to study and work with problems where ice may have some application. Once they become sold on the idea and what it will do, they will spread the information where it will do the most good. We hope it will be possible to encourage unit associations in other states to undertake a similar program.

Application of Ice in Displaying Meats: A few ice companies are selling processed ice for use in displaying meats. At the July meeting of our Research Committee, a cooperative study was agreed upon whereby the National Association and the Union Ice Company would jointly underwrite a study of this type at the University of California. Red meats displayed in platters on crushed ice will be compared to the display of identical cuts in mechanical cases. Records will be kept on shrinkage, and other quality factors. The tests will be conducted during the current school year.

Icing of Produce Which is Grown and Consumed Locally: A new cooperative produce icing study has been approved for the University of Massachusetts for next year. It is to be jointly sponsored by the New England and the National Associations. We hope to get our money matched by Research and Marketing Act funds. The work will be a continuation of the type of work which we sponsored in 1947 and 1948. It will deal with the icing of asparagus and other products which are grown and marketed locally.

Proper Temperatures for Conveyance of Frozen Foods in Refrigerator Cars: Early in the year, we conducted an extensive investigation of the research which had been done on the effect of small fluctuations in temperature on the quality of frozen foods. At that time, we indicated that because of differences of opinion among the authorities as to what effect small fluctuations at low temperature for a short time have on quality, the Department of Agriculture with a token grant from the Refrigeration Research Foundation has underwritten a study to develop the facts. Twenty-one thousand dollars was allocated for the first year and a substantially larger sum has been allocated for this year. The study has been planned, the facilities are about ready and preliminary tests are under way. It will be some time before any results are available.

Portable Retail Ice Station: Our Research Department and Armstrong Cork Company cooperated in the design of a portable ice station which would be suitable as a manually operated retail unit or for housing vending equipment. The Research Committee put its best ideas into the design of this unit. The plans went forward to the membership in News Letter No. 22.

Test of York Ice Maker to Offset Tonnage Losses: We conducted a performance on the York so-called cube machine and prepared a cost analysis, cost sheets and specimen sheets for use in the kit "Ammunition to Meet the New Competition."

In August, after the appearence of one of these new units, we arranged to run a performance test. The information developed has been summarized and this report was anounced and offered to the membership in News Letter No. 22.

Survey of Mechanical Refrigerator Owners As a Market for Processed Ice: At the last meeting you were acquainted with the interest of the Research Committee and Personnel Training and Marketing Committee in determining exactly what type of market for ice is available in the homes which make use of mechanical refrigerators.

As you know, the two Committees cooperated in preparing a questionnaire and with the cooperation of forty ice companies over the country, we conducted a well-planned survey of this market. Cities of all sizes in all geographic areas were examined. Between four and five thousand homes were visited in every section of the country. Of course, we do not have all of the answers, but we did learn a lot about this market.

Survey of Vending Machine Users: As a follow-up study of the users of mechanical refrigerators, our Research Committee feels that we should prepare a questionnaire to be used in interviewing customers who are actually purchasing from vending machines. This would be only a spot study in a few places for the purpose of getting additional information on this unit which could be used in making maximum use of the station in serving the various types of customers.

I repeat that one or two of the above ideas properly developed and put into effect could easily offset one per cent to 5 per cent of your tonnage loss, but the big problem is to get ice company executives to realize the controlling importance of these small cumulative shifts in sales volume. Because this percentage is small in comparison with the total year to year fluctuation, we are prone to overlook the importance of it

This is primarily a matter of sales work. We as an industry, were never very sales-minded, and most of what little we had was lost during the war years. Those of us who survive the new competitive era ahead are going to have to get back into it again with everything we have. There isn't any alternative. It's either that or liquidation. If we, as individual ice companies, do not develop additions tonnage in new markets to offset our losses to other forms of refrigeration each year, year by year, it's only a matter of time until we will be liquidated.

Personnel Training and Marketing

It requires determined and presistent effort to develop a substantial market for processed ice by mechanical refrigerator owners. Neither is it easy to convince an occasional stubborn owner of a produce market that it will pay him to invest several hundred dollars in new display equipment and buy two or three dollars worth of ice each day. And here again, what is the National Association doing to place the sales tools and sales aids at our disposal to make us more sales conscious? Well, I will give you an outline here of what is being done by the personnel training and marketing division of the National Association under the leadership and guidance of our capable and energetic Director, Dan Prager, and his Industry Committee.

The Personnel Training and Marketing Department has produced fourteen employee training films; a comprehensive written training course; a 30-minute Dealer training film; a service manual for Route men; and a complete safety training program, including two safety films. These materials are basic and elementary in their application to route men, and have been used in training thousands of ice employees and dealers. They are still available, and should be used in training thousands more who have not been exposed to adequate service training—and in retraining all ice people who contact the public. These programs would have cost any individual ice company $100,000 to produce. But they are offered to members at a nominal charge.

The War caused the quality of our service to descend to a very low level. The primary objective of our first training courses was to provide help in correcting that situation. But we are now facing a serious selling problem, somewhat different from the immediate post-war period.

Some members have expressed need for a new sales training program, with the accent all the way through on teaching ice people how to sell ice, how to tell the fundamentals of ice refrigeration, how to locate prospects, why people buy, how to make the ice sale presentation, how to handle objections, how to close sales, all applying to ice equipment, and to the numerous types and uses of ice.

Such a course has been outlined, consisting of fully illustrated text material for 16 sales meetings, and a new series of 9 color slide films, including complete suggestions for the manager's use of the program. A detailed outline of the new course, which can be made available for 1950, has been sent to every member. This program will be produced if enough members signify sufficient need and desire for it now to assure such production on a sound financial basis.

Merchandising and Field Work: The Committee has considered in recent meetings the need for point-of-sale ice merchandising materials, and the making available of such materials to members for local use in promoting more ice business in establishments that use ice in their service

to the public, such as hotels, restaurants, taverns, grocers, beverage dealers, and the like. The Committee has also discussed the possibility of maintaining contact by the Department with headquarters offices of these businesses to learn how the ice industry can best correlate its merchandising plans to their established programs, all endeavoring to hold and expend markets for ice.

National Ice Merchandising Forum: Recognizing the need within the industry for activity to stimulate more progressive merchandising of ice and appliances, and also to provide a medium for discussion and free exchange of merchandising ideas and plans among active ice merchandisers, the Department has, since last January, organized the National Ice Merchandising Forum, and has set up local Ice Merchandising Forums within the Unit Associations in the following states: Texas, Oklahoma, Kansas, Missouri, Ohio, Illinois, Indiana, Arkansas, North Carolina, Louisiana, Mississippi, Maine, New Hampshire, Vermont, Rhode Island, Massachusetts, and Connecticut. The plan will be set up in Florida and several other states in the immediate future.

Tying all of the local merchandising forums into an industry-wide merchandising program, the National Ice Merchandising Forum is composed of the Chairman of the State Merchandising Forums. These Chairmen will meet with the Personnel Training and Marketing Department Committee from time to time for the purpose of counselling with this committee on plans designed to serve the membership more effectively within the Department's entire scope of operation.

National Ice Marketing Institute: The first series of National Ice Marketing Institute classes was completed last March 18. We are now in the second series which is scheduled to terminate next March 17. So far, 135 men from 65 companies, operating in 36 states and Canada, have graduated from the Institute. Without exception, every graduate has been highly complimentary concerning the knowledge, enthusiasm, and inspiration gained by taking the course.

More important, though, is the appraisal by employers of these men in their operation after they were back home on the job. This appraisal has been that cost of sending men to Washington has proved to be a very sound investment, that the men received practical, workable ideas and are putting them into effect very profitably, that the injection of new enthusiasm for the Ice Business has been most gratifying, and that these companies freely recommend the Washington courses to all progressive ice companies as a means of attracting and training young executives to protect and further the interests of the Ice Industry.

However, we have been disappointed with the number of enrollments in the school, particularly this year. Prior to first opening of the Institute, a canvass of our membership indicated sufficient interest in the Washington course so that it could be carried on during the winter months from year to year. Certainly, in an industry of our size, there should be enough forward-looking companies and a sufficient number of younger executives and new men entering the business to make that possible.

It is our earnest hope that members will continue to invest in the future of their business by sending those in higher supervisory positions to the Institute, because only by that means can the Washington school, an important activity that definitely has proven its worth, be maintained.

Advertising Publicity Program

It certainly is gratifying to know that the industry will again have a major Advertising Publicity Program, this year the 100th Anniversary of Ice. This is an opportunity to cash in on such an event. We are anticipating raising $450,000 for this program and within a very short time after the program was announced approximately two-thirds of this amount was subscribed and the balance should not be difficult, if everyone will do their part.

This is an Industry Program and we need the assistance and support of everyone, large or small, and even if you did not subscribe last year or the year before, you should participate this time to make it a gala event. There is no doubt but that the advertising program carried on for the past several years has given the Ice Industry good press relations and the dignity and prestige it deserves.

Our Advertising Program has been well balanced and the appeal directed to a number of fields. We have a top flight advertising agency handling our advertising, our advertising staff is doing an excellent job, and especially our hard working and industrious operating committee under the supervision of Pop Gunn. Members of the Operating Committee are the ones responsible for the type of advertising media that is used, and they work with the Advertising Director, the Advertising Agency, as well as the Board of Directors.

I also wish to pay tribute to Guy Jacobs, the pilot of NIPR Department, who is doing an excellent job of piloting. He should. He has guided that ship for twelve years and that is not a simple post. Directing the collection and expenditure of an average of $500,000 a year in advertising and publicity funds is no job for a novice. Guy is doing a remarkable job.

Few Disturbed Markets

One of the encouraging features in the industry picture this year is that despite the heavy decline in sales and operating load factors, there have been relatively few disturbed market situations; relatively few price wars and broken markets. A number have been on the verge of collapse since early summer, but most of them have managed thus far to maintain their equilibrium. It is to be hoped that the industry has learned the futility of trying to pull itself up by such costly bootstraps.

Government Supervision

And right here is a good place to observe a significant warning signal. The Anti-trust boys in our Federal Government are out on a big hunt for new game. In their enthusiastic eagerness they seem to be disposed to shoot sometimes before they are quite sure whether the target is legitimate game or harmless, domestic stock. One reason for this, perhaps, is that some domestic stock may have strayed away from the domestic pastures during the war years. That is highly improbable but possible.

In any event, several ice companies are presently under indictment or grand jury investigation for infraction of the Federal Anti-trust laws, and it may be well for every ice company doing business in interstate commerce to re-examine its position in this respect.

Another significant development during this past year was the passage of the new wage-hour Law. Your Association Counsel, Bill Jobe, did excellent work on this Bill. He has spent countless hours talking to the different committees and parties involved, and worked with other organizations, and also, alerted the industry at the proper time and urged their support which, of course, was forthcoming. He spent tireless effort and worked industriously to secure as favorable Bill as possible for the Industry. The subject will be discussed at some length by able lawyers on your Convention Program. So, I shall not attempt to touch upon it in this report except to say that, as a result of a tremendous amount of work on the part of your Association Counsel and a number of loyal, patriotic members, the interests of the ice industry were protected in this legislation to an extent which would have been wholly impossible a few years ago.

Association Business

Now, let's have a look at the business or financial affairs of your organization. They are important because a sound fiscal position is just as vital to a trade association as it is to any other business undertaking. No Association work program can progress far beyond the soundness of its fiscal position.

You have just heard the treasurers report, to which I am pleased to add that your Association's financial affairs are in the best position they have ever been. Our fiscal year ended with a cash balance of $281,583.94. One year ago, the balance was $262,390.30 in the regular activities account.

(Continued on page 65)

Value for Your Public Relations Dollar

By E. L. Gunn, Jr.
Chairman Operating Committee
National Association of Ice Industries

WE of the Operating Committee and staff of the Advertising and Public Relations Department feel that the ice industry received greater value for its public relation dollar during 1949 than at any time since the Program has been re-organized.

We have tried to keep the industry informed by the "Here's How" bulletin and the more recent "Ice Public Relations Today," yet when the time comes to raise money for a new campaign, we find relatively few ice industry executives who have a full appreciation and understanding of the wide scope of our activities.

The finance committee has been hard at work to raise a substantial fund for the 100th Anniversary Campaign. To those companies who have subscribed to the new campaign and to those who have delayed, we feel that a review of our 1949 activities would be in order.

The Campaign was set up on a budget of $417,000.00, but expenditures were reduced to $370,000 when the total subscriptions failed to meet the budget. These expenditures were as follows:

Public Relations Promotion	$ 25,475.90	6.88%
Public Relations Counsel	6,750.00	1.82
Field Service	20,593.63	5.56
National Exhibits	6,499.13	1.76
ADVERTISING		
General Magazines	186,820.76	50.44
Commercial Magazines	43,004.96	11.61
	$229,825.72	62.05
Less Discount	3,518.43	.95
	$226,307.29	61.10
PUBLICITY		
Reader-Request Material	14,173.63	3.83
Other Non-Revenue Material	9,232.78	2.49
"Naturally Yours"	1,201.74	.32
"Grade Teacher"	7,690.30	2.08
Material for Resale	9,621.18	2.60
CONVENTION EXPENSE		
NAII Convention Publicity	1,031.13	.28
NAII Convention Presentation	3,881.34	1.05
Unit Assn. Convention Presentation	1,821.56	.49
Fund Raising	10,107.69	2.73
Business Administration	25,983.70	7.01
	$370,370.14	100.00%

For this expenditure, we received over 1245 newspaper clippings of special articles dealing with the ice business and its relation to other industries. Could the space have been purchased, it would have cost in excess of $54,000.00. We had 72 different articles in trade magazines, which would have cost over $23,000. The space taken up by the article in Business Week alone would have cost $3,150. There were many feature articles in consumer magazines. Of particular interest was the Woman's Home Companion piece on home made Ice Cream—full page, full-color picture and a half-page story. Collier's ran a full page in color giving excellent prominence to ice, and Esquire devoted its cover and an inside mention.

You will probably recall the full-page, full-color ads of Four Roses, Coca Cola, 7-Up, Budweiser Beer and Puerto Rican Rum, which appeared in many of the top National magazines. We can safely estimate $20,000 worth of publicity received in consumer magazines. The grand total in terms of advertising dollars was $97,328. This was a contribution of others outside our industry and was largely brought about through the work of our staff in good inter-industry relations and in cultivating a favorable press.

Our own campaign consisted of 23 ads in general consumer magazines, including: Better Homes and Gardens, Good Housekeeping, Ladies Home Journal, Pathfinder, Saturday Evening Post, Womans Home Companion, Life; and 170 ads in trade or commercial magazines serving the hotel, tavern, restaurant, grocery, home economics and packers and growers fields.

When the threat of new ice cube machines became apparent, the staff and Operating Committee worked with the other Departments of the Association to develop an "Ammunition Kit." Also more space was allocated to commercial magazines serving those specific industries. Genuine Crystal Clear Hard Frozen Ice-Man's Ice was advertised in every issue of the ten major publications serving the hotel, tavern and restaurant fields.

Certain pieces of specific literature which were developed were offered in the ads. We know the ads were read for the response to our offers was terrific. During the fiscal year ending September 30, the Washington Office handled 30,882 individual requests and mailed out 536,404 pieces. These requests came from every state in the Union.

Andy Aldrich, our field service director, took ice and ice using appliances on the road to places where important people gather. Many new friends were made for ice by exhibits at the Annual Conventions of leading trade and professional organizations.

In addition, Andy covered eight state grocers conventions under the sponsorship of local ice Associations and put on demonstrations in over 55 other cities. In connection with these conventions and city visitations, Andy estimates that he worked with 270 ice companies, put on 112 demonstrations, screened the film "Naturally Yours" 84 times and had more than 9,000 food operators at the demonstrations.

I wish to pay tribute to the members of the Department and others who worked so hard this year to give the industry such a great return on its advertising dollar. To the larger ice companies a special acknowledgement is due. These larger companies for the most part are diversified, with other lines that may be equally or more profitable than ice, but they have enough confidence in the future of the ice business to invest large sums of money in the ice advertising program.

We are now in the midst of financing and developing a 100th Anniversary Campaign. During the past 100 years, the ice industry has been born and nutured into full vigor until today the health of our Nation and the life of large centers of population are possible because of it.

To cut off this support now would be industry suicide because it represents industry insurance against diminishing profit. The 100th year of the ice industry is probably the most critical in its long life. Only a greater effort on our part will keep the industry from slipping back to the level of the 1930's when price wars and bankruptcy were the common thing.

Report presented at 32nd Annual Convention National Association of Ice Industries November 17, 1949.

A Practical Solution to Accurate Refrigeration Storage Costs

PART II

How to Calculate the Heat Losses Due to Receiving, Freezing and Holding Commodities

By

D. O. Haynes
Vice-President

James W. Straub
Controller

Merchant Refrigerating Co., New York, N. Y.

THE heat losses which we discussed at length in the previous article of this series are those incidental to maintaining proper temperature conditions in the various storage rooms regardless of the plant's activity. Quite appropriately they are called the dead load losses. The next problem is to study the effects on refrigeration requirements due to receiving, freezing and holding the different kinds of commodities handled during a given period.

The physical principles underlying the refrigeration of commodities are quite simple, but their practical application to cost finding involves the preparation of considerable reference material. We shall first cover the principles and then describe the necessary records used in developing the commodity load for the plant and individual commodity costs.

Products offered for storage in the coolers usually arrive at the warehouse warmer than the temperatures in the rooms where they are to be preserved. The excess heat is withdrawn in the storage room until the products have been chilled to room temperature. Furthermore, fresh fruits and vegetables "breathe" all during their storage lives. Even though they are chilled down close to their freezing points the life processes of these commodities go on. One result is that they continue to form carbon dioxide, a chemical change involving the generation of heat. Refrigeration is needed, not only to bring cooler commodities down to the temperature of the storage environment but also to remove the heat produced by those which continue to breathe in that environment.

Freezer-stored products are received in one of three different states. They may reach the plant "fresh," in which case they are first chilled to the point of freezing and then, because the room is at low temperature, they are frozen. They may be chilled when they arrive—that is, they may be considerably cooler than the temperature of the outside air, but they must still be frozen. Even those products which are frozen before they reach the warehouse are not usually as cold as the rooms in which they are to be stored. In all three instances, heat must be removed from freezer products—most in the first, less in the second and least in the third.

Basic Factors

The amount of heat, measured in Btu, required to raise the temperature of one pound of a product one degree Fahrenheit is called its specific heat. Since the amount of heat absorbed by a product when its temperature is raised one degree is the same as that which must be withdrawn from it in order to lower its temperature one degree we use the term specific heat when we talk about refrigerating a product as meaning the number of Btu which must be removed from one pound of the product in order to lower its temperature one degree. The reader will recognize from the definition of Btu given in Part I that the specific heat of water is 1, because it requires the removal of 1 Btu to lower the temperature of one pound of water one degree. Specific heat is abbreviated to sp. ht. This is a good point to mention that we shall find the specific heats of various commodities are largely dependent upon the percent of water in their composition.

Part II of a Series

This second article in the series on cold storage costs tells how to determine the refrigeration required to chill, freeze and maintain temperature of commodities in storage. Detail data and useful tables and charts are included. The four part series uses combined engineering-accounting principles to set up true refrigerated storage and commodity costs for the refrigerated warehouse.

Figuring the heat that must be withdrawn from a product would be an easy matter if its specific heat were the same regardless of the product's state. Unfortunately, from the standpoint of the mathematical work involved, the specific heat of a product is different above and below its freezing point. The problem is further complicated because considerable heat must also be removed from the product while it is still at its freezing point, changing from the unfrozen to the frozen state. This heat cannot be measured by a thermometer — hence it is called latent, meaning hidden heat. Its more specific name is the latent heat of fusion. In order, therefore, to calculate the heat units for which refrigeration must be supplied in cooling a product down to its freezing point, freezing it and then further reducing its temperature to that of the storage room we must know three factors: the specific heat of the product *before freezing*, its latent heat of fusion and its specific heat *after freezing*. Obviously we need to know only the specific heat before freezing of products habitually stored in coolers.

COMMODITY STORAGE SPECIFICATION CARD — COOLER | ~~FREEZER~~ | ~~SHARP FREEZER~~

TONS OF REFRIGERATION PER TARIFF UNIT

COMMODITY RECEIVED CHILLED OR AT M. T.

°F	TONS/T.U.	°F	TONS/T.U.	°F	TONS/T.U.
90	.00840	65	.00490	40	.00140
89	.00826	64	.00476	39	.00126
88	.00812	63	.00462	38	.00112
87	.00798	62	.00448	37	.00098
86	.00784	61	.00434	36	.00084
85	.00770	60	.00420	35	.00070
84	.00756	59	.00406	34	.00056
83	.00742	58	.00392	33	.00042
82	.00728	57	.00378	32	.00028
81	.00714	56	.00364	31	.00014
80	.00700	55	.00350	30	0
79	.00686	54	.00336		
78	.00672	53	.00322		
77	.00658	52	.00308		
76	.00644	51	.00294		
75	.00630	50	.00280		
74	.00616	49	.00266		
73	.00602	48	.00252		
72	.00588	47	.00238		
71	.00574	46	.00224		
70	.00560	45	.00210		
69	.00546	44	.00196		
68	.00532	43	.00182		
67	.00518	42	.00168		
66	.00504	41	.00154		

FORM 813 1M 10-44

COMMODITY RECEIVED FROZEN

°F	TONS/T.U.
30	
29	
28	
27	
26	
25	
24	
23	
22	
21	

FROZEN

°F	TONS/T.U.
20	
19	
18	
17	
16	
15	
14	
13	
12	
11	
10	
9	
8	
7	
6	
5	
4	
3	
2	
1	
0	
-1	
-2	
-3	
-4	

FROZEN

°F	TONS/T.U.
- 5	
- 6	
- 7	
- 8	
- 9	
-10	
-11	
-12	
-13	
-14	
-15	

COMMODITY: EGGS, SHELL

CODE: 001

CONTAINER: Wooden Case

WEIGHT: 55 G 43 N

WGT. FACTORS: 1.279 G .782 N

TARIFF UNIT:

Sp. Ht. .76

USUAL REC'V'G TEMP.

_____ FROZEN

x CHILLED

_____ M. T

REFRIGERATION TO HOLD FOR 24 HRS.

0 TONS/T. U.

HOLD FOR 1 MONTH

0 TONS/T. U.

COMMODITY STORAGE SPECIFICATION CARD — ~~COOLER~~ | ~~FREEZER~~ | SHARP FREEZER

TONS OF REFRIGERATION PER TARIFF UNIT

COMMODITY RECEIVED CHILLED OR AT M. T.

°F	TONS/T.U.	°F	TONS/T.U.	°F	TONS/T.U.
90	.05114	65	.04489	40	.03864
89	.05089	64	.04464	39	.03839
88	.05064	63	.04439	38	.03814
87	.05039	62	.04414	37	.03789
86	.05014	61	.04389	36	.03764
85	.04989	60	.04364	35	.03739
84	.04964	59	.04339	34	.03714
83	.04939	58	.04314	33	.03689
82	.04914	57	.04289	32	.03664
81	.04889	56	.04264	31	.03639
80	.04864	55	.04239	30	.03614
79	.04839	54	.04214		
78	.04814	53	.04189		
77	.04789	52	.04164		
76	.04764	51	.04139		
75	.04739	50	.04114		
74	.04714	49	.04089		
73	.04689	48	.04064		
72	.04664	47	.04039		
71	.04639	46	.04014		
70	.04614	45	.03989		
69	.04589	44	.03964		
68	.04564	43	.03939		
67	.04539	42	.03914		
66	.04514	41	.03889		

FORM 813 1M 10-44

COMMODITY RECEIVED FROZEN

°F	TONS/T.U.
30	.00490
29	.00476
28	.00462
27	.00448
26	.00434
25	.00420
24	.00406
23	.00392
22	.00378
21	.00364

FROZEN

°F	TONS/T.U.
20	.00350
19	.00336
18	.00322
17	.00308
16	.00294
15	.00280
14	.00266
13	.00252
12	.00238
11	.00224
10	.00210
9	.00196
8	.00182
7	.00168
6	.00154
5	.00140
4	.00126
3	.00112
2	.00098
1	.00084
0	.00070
-1	.00056
-2	.00042
-3	.00028
-4	.00014

FROZEN

°F	TONS/T.U.
- 5	0
- 6	
- 7	
- 8	
- 9	
-10	
-11	
-12	
-13	
-14	
-15	

COMMODITY: BONELESS BEEF

CODE: 600

CONTAINER: Carton

WEIGHT: 127.3 G 122.3 N

WGT. FACTORS: 1.041 G .961 N

TARIFF UNIT: 100 lbs. net

Sp. Hts. .69 .38 Lt. Ht. 100

USUAL REC'V'G TEMP.

x FROZEN

_____ CHILLED

_____ M. T.

REFRIGERATION TO HOLD FOR 24 HRS.

0 TONS/T. U

HOLD FOR 1 MONTH

0 TONS/T. U.

Form 3—Examples of completed Commodity Storage Specification Cards: shell eggs, cooler storage above; boneless beef, freezer storage below.

Commodity Cards

In order to find the heat load of a plant caused by refrigerating the products stored it is essential to have a set of cards—one for each kind of commodity handled—similar to Form 3. The Commodity Storage Specification Card records all the information needed in order to calculate the heat which must be withdrawn from a product expressed in tons of refrigeration per tariff unit (T. U.) of the product. The temperatures at the left are those at which the product might be received. Suppose, for example, that cases of eggs arrive at the warehouse after having been exposed for some time to outside atmospheric conditions. We shall assume that the prevailing mean temperature during the period in question was 65 F. A glance at the Commodity Card for shell eggs shows us that 0.00490 tons of refrigeration will have to be supplied in order to chill each case of eggs down to cooler-room temperature of 30 F. Had the product been boneless beef received under similar conditions, but destined for the sharp freezer, the card for this product indicated that 0.04489 tons of refrigeration will be needed for each one-hundred pounds of this commodity so handled.

TABLE I—PHYSICAL PROPERTIES OF COMMODITIES ARRANGED ACCORDING TO MOISTURE CONTENT

	% Water	Sp. ht. Before Freezing	Sp. ht. After Freezing	Latent Heat of Fusion
Asparagus	93	.95	.44	134
Eggs, Shell	73	.76	.38	100
Orange Juice	85	.89	.43	123
Potatoes (Irish)	79	.77	.44	105
Fish (Fresh)	76	.82	.41	96
Peas (Green)	74	.80	.42	108
Mutton	67	.81	.39	96
Veal	63	.71	.39	91
Beef, Boneless	62	.69	.40	100
Poultry	60	.80	.41	99
Cheese	35	.64		
Bacon	20	.55	.31	30
Butter	10	.30	.24	14

product the corresponding specific heats before and after freezing and the latent heat of fusion. For example, should the product contain 80 per cent moisture, the specific heat above 32 F. can be used as the specific heat before freezing —0.84—and the specific heat below 32 F. as that after freezing—0.44. The latent heat of fusion is read from the chart

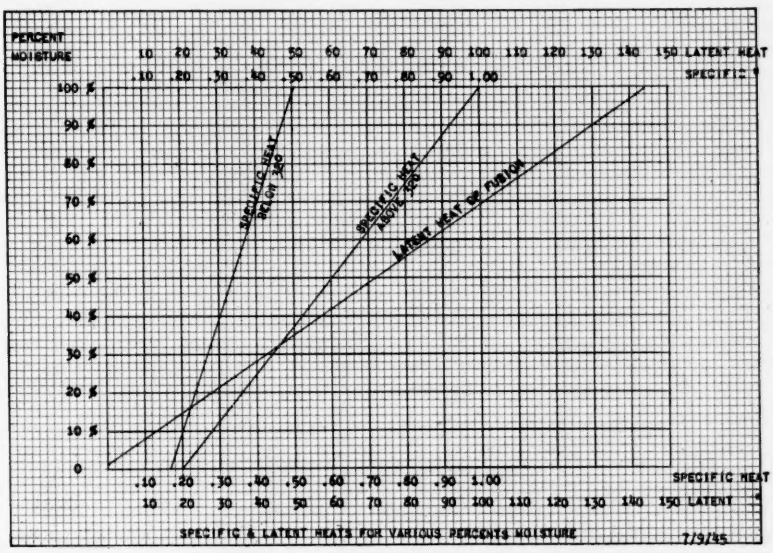


Chart 1—Specific heats above and below freezing and the latent heat (heat of fusion) for commodities based upon the per cent of moisture contained in them. Locate per cent of moisture at left and follow across to read heats at the line intersections.

Space does not permit our giving a complete list of all products stored in refrigerated warehouses with the data to prepare cards for each one, but some commodities are shown in Table 1 by way of illustration.

It was mentioned previously that the percent of water in a product determines to a considerable extent the specific heats and the heat of fusion of the product. This gives us a clue to follow when we do not know these factors for a given commodity. The data for the majority of cold storage products can be found in reference tables in texts on refrigeration, but occasionally no such information can be located. In such cases resort can be made to Chart 1 which shows, according to the percent of moisture content of any

as 116. These figures would probably not be exact for any given product, but would be sufficiently close to use for all practical purposes. The reader can readily check this point by comparing the figures given in Table 1 with readings made from Chart 1 opposite the respective percents of moisture.

Tonnage Rates

Tables 2 and 3 show the tons of refrigeration per 100 pounds of commodity for 1 deg. difference in temperature and the tons of refrigeration per 100-pounds of commodity to freeze it from and at the freezing temperature. Table 2

gives the information for specific heats from 1.00 to .20 and Table 3 for heats of fusion from 150 to 75.

The basis for Table 2 is the following formula:

$$\text{Tons of Refrigeration} = \frac{\text{sp.ht.} \times 100 \text{ lbs.}}{288{,}000 \text{ Btu}}$$

Suppose that a certain product thas a sp.ht. of 0.72, the tons of refrigeration required to reduce 100 pounds 1 degree are:

$\frac{.72 \times 100}{288{,}000}$ or .00025, the figure shown opposite .72 in the table.

TABLE 2—TONS OF REFRIGERATION PER 100 LBS. OF COMMODITY FOR 1F. DIFFERENCE IN TEMPERATURE

Sp. Ht.	Tons/100 lbs.	Sp. Ht.	Tons/100 lbs.
1.00	.00035	.60	.00021
.99	.00034	.59	.00020
.98	.00034	.58	.00020
.97	.00034	.57	.00020
.96	.00033	.56	.00019
.95	.00033	.55	.00019
.94	.00033	.54	.00019
.93	.00032	.53	.00018
.92	.00032	.52	.00018
.91	.00032	.51	.00018
.90	.00031	.50	.00017
.89	.00031	.49	.00017
.88	.00031	.48	.00017
.87	.00030	.47	.00016
.86	.00030	.46	.00016
.85	.00030	.45	.00016
.84	.00029	.44	.00015
.83	.00029	.43	.00015
.82	.00028	.42	.00015
.81	.00028	.41	.00014
.80	.00028	.40	.00014
.79	.00027	.39	.00014
.78	.00027	.38	.00013
.77	.00027	.37	.00013
.76	.00026	.36	.00013
.75	.00026	.35	.00012
.74	.00026	.34	.00012
.73	.00025	.33	.00011
.72	.00025	.32	.00011
.71	.00025	.31	.00011
.70	.00024	.30	.00010
.69	.00024	.29	.00010
.68	.00024	.28	.00010
.67	.00023	.27	.00009
.66	.00023	.26	.00009
.65	.00023	.25	.00009
.64	.00022	.24	.00008
.63	.00022	.23	.00008
.62	.00022	.22	.00008
.61	.00021	.21	.00007
		.20	.00007

The figures in Table 3 have been developed in the same way, except that instead of the specific heats before or after freezing the latent heat of fusion is the first factor in the numerator of the equation. Thus:

$$\frac{\text{Latent ht.} \times 100 \text{ lbs.}}{288{,}000 \text{ Btu}}$$

We can use the two sample cards as examples of how the tables were used in their preparation.

The Commodity Card for shell eggs needs to be filled in for above freezing only. The sp.ht. is 0.76 and reference to Table 2 shows us that .00026 tons of refrigeration per 100 pounds of product is the figure we are seeking. The tariff unit for this commodity is the case. In these calculations we use the gross weight of the product because refrigeration is needed to cool down the container as well as the product. Of course, the sp.ht. of wood is not the same as that of eggs, but the small weight of the container in comparison to the weight of the product permits us to use the figure for the product for both without any serious error.

Since the tons required is for 100 pounds of product we must multiply it by .55 in order to reduce it to that required for 55 pounds. The resulting figure is .000143. The figures throughout are carried only as far as the fifth decimal, so

TABLE 3—TONS OF REFRIGERATION PER 100 LBS. OF COMMODITY TO FREEZE FROM AND AT FREEZING TEMPERATURE

Latent Heat of Fusion	Tons/100 lbs.	Latent Heat of Fusion	Tons/100 lbs.
150	.05208	112	.03889
149	.05174	111	.03854
148	.05139	110	.03819
147	.05104	109	.03785
146	.05069	108	.03750
145	.05035	107	.03715
144	.05000	106	.03681
143	.04965	105	.03646
142	.04931	104	.03611
141	.04896	103	.03576
140	.04861	102	.03542
139	.04826	101	.03507
138	.04792	100	.03472
137	.04757	99	.03438
136	.04722	98	.03403
135	.04688	97	.03368
134	.04653	96	.03333
133	.04618	95	.03299
132	.04583	94	.03264
131	.04549	93	.03229
130	.04514	92	.03194
129	.04479	91	.03160
128	.04444	90	.03125
127	.04410	89	.03090
126	.04375	88	.03056
125	.04340	87	.03021
124	.04306	86	.02986
123	.04271	85	.02952
122	.04236	84	.02917
121	.04201	83	.02882
120	.04167	82	.02847
119	.04132	81	.02813
118	.04097	80	.02778
117	.04063	79	.02743
116	.04028	78	.02708
115	.03993	77	.02674
114	.03958	76	.02639
113	.03924	75	.02604
74	.02569	37	.01285
73	.02535	36	.01250
72	.02500	35	.01215
71	.02465	34	.01181
70	.02431	33	.01146
69	.02396	32	.01111
68	.02361	31	.01076
67	.02326	30	.01042
66	.02292	29	.01007
65	.02257	28	.00972
64	.02222	27	.00938
63	.02188	26	.00903
62	.02153	25	.00868
61	.02118	24	.00833
60	.02083	23	.00799
59	.02049	22	.00764
58	.02014	21	.00729
57	.01979	20	.00694
56	.01944	19	.00660
55	.01910	18	.00625
54	.01875	17	.00590
53	.01840	16	.00556
52	.01806	15	.00521
51	.01771	14	.00486
50	.01736	13	.00451
49	.01701	12	.00417
48	.01667	11	.00382
47	.01632	10	.00347
46	.01597	9	.00313
45	.01563	8	.00278
44	.01528	7	.00243
43	.01493	6	.00208
42	.01458	5	.00174
41	.01424	4	.00139
40	.01389	3	.00104
39	.01354	2	.00069
38	.01319	1	.00035

COMMODITY LOAD WORK SHEET

COMMODITES RECEIVED IN **Coolers** COMPANY _____

PERIOD OF RECEIPTS **August** LOCATION _____

Used to calculate the refrigeration used in bringing commodities to storage temperature from the temperature at which received. Quantities should be expressed in the same units as those in which storage rates are quoted. Where units are packages indicate the average weight of package in parenthesis.

COMMODITY		TEMP. WHEN REC'D			QUANTITY RECEIVED		TONS OF REFRIGERATION	
CODE or SYMBOL	NAME	PERCENT AT			POUNDS (Some instances P'k'gs)	GROSS or NET	PER UNIT (Per 100 lbs. or per Pkg)	TOTAL TONS
		M. T.	CHILLED	FROZEN				
001	Eggs, shell	20%	80%		12,000 cases	55 lb	.00244	29.28

TEMPERATURES FOR THIS PERIOD	77°	40°			TOTAL TONS FOR THIS PERIOD	A 380.15
FACTOR TO REDUCE TONS FOR PERIOD TO TONS PER DAY IN MONTH OF 30.4167 DAYS (see table of Equivalents)			B	.98118	TOTAL TONS AxB	373

COMMODITY LOAD WORK SHEET

COMMODITES RECEIVED IN **Freezers** COMPANY _____

PERIOD OF RECEIPTS **August** LOCATION _____

Used to calculate the refrigeration used in bringing commodities to storage temperature from the temperature at which received. Quantities should be expressed in the same units as those in which storage rates are quoted. Where units are packages indicate the average weight of package in parenthesis.

COMMODITY		TEMP. WHEN REC'D			QUANTITY RECEIVED		TONS OF REFRIGERATION	
CODE or SYMBOL	NAME	PERCENT AT			POUNDS (Some instances P'k'gs)	GROSS or NET	PER UNIT (Per 100 lbs. or per Pkg)	TOTAL TONS
		M. T.	CHILLED	FROZEN				
600	Beef			100%	2,750,000	net	.00350	96.25

TEMPERATURES FOR THIS PERIOD	77°	40°	20°		TOTAL TONS FOR THIS PERIOD	A	787.83
FACTOR TO REDUCE TONS FOR PERIOD TO TONS PER DAY IN MONTH OF 30.4167 DAYS (see table of Equivalents)			B	.98118	TOTAL TONS AxB		773

COMMODITY LOAD WORK SHEET

COMMODITES RECEIVED IN **Sharp Freezer** COMPANY _____

PERIOD OF RECEIPTS **August** LOCATION _____

Used to calculate the refrigeration used in bringing commodities to storage temperature from the temperature at which received. Quantities should be expressed in the same units as those in which storage rates are quoted. Where units are packages indicate the average weight of package in parenthesis.

COMMODITY		TEMP. WHEN REC'D			QUANTITY RECEIVED		TONS OF REFRIGERATION	
CODE or SYMBOL	NAME	PERCENT AT			POUNDS (Some instances P'k'gs)	GROSS or NET	PER UNIT (Per 100 lbs. or per Pkg)	TOTAL TONS
		M. T.	CHILLED	FROZEN				
538	Strawberries	100%			25,000	gross	.07088	17.72

TEMPERATURES FOR THIS PERIOD	77°	40°	20°		TOTAL TONS FOR THIS PERIOD	A	93.76
FACTOR TO REDUCE TONS FOR PERIOD TO TONS PER DAY IN MONTH OF 30.4167 DAYS (see table of Equivalents)			B	.98118	TOTAL TONS AxB		92

Form 4—Three Commodity Load Work Sheets for coolers, freezers and sharp freezers as shown by the headings typed at the top of the sheet.

COMMODITY HOLD LOAD — AVERAGE DAILY INVENTORY — COMPANY _____

WORK SHEET — PERIOD OF INVENTORY August — LOCATION _____

Fresh Fruits and Vegetables "breathe" in cooler storage conditions. This sheet is used to calculate the refrigeration necessary to counteract the heat generated in the breathing process.

COMMODITY		AVERAGE DAILY INVENTORY		TONS OF REFRIGERATION	
CODE or SYMBOL	NAME	POUNDS (Some instances Packages)	GROSS or NET	PER 100 LBS. (OR PKG.) TO HOLD ONE DAY	TOTAL FOR ONE DAY
427	Oranges	5,000 crates		.00014	.70
				TOTAL TONS FOR ONE DAY	A 1.20
				TOTAL TONS FOR AVERAGE MONTH A x 30.41667	37.0

Form 5—A Commodity Hold Load Work Sheet.

we use .00014. We are now ready to make up the card for this commodity. Should the eggs arrive with a temperature of 30 F. no refrigeration is needed—that being the temperature of our coolers. We start, therefore, by writing in 0 opposite 30 F. and then .00014 opposite 31 F. For each degree of temperature the figure is increased by .00014. When all the spaces have been filled in we have a record which tells us the number of tons of refrigeration required to chill a case of shell eggs down to room temperature depending upon the temperature at which it is received.

Boneless beef is usually received frozen, but it might come in fresh to be frozen so while we are preparing the card for this commodity we will fill it out completely. The sp.ht. of boneless beef above freezing is 0.69, below freezing is 0.38 and its latent heat of fusion is 100. Table 2 gives us the tonnage figures above and below freezing per 100 pounds as .00024 and .00013 respectively. Table 3 is used to find the latent heat of fusion, .03472. We want, of course, to find the tons of refrigeration for 100 pounds of product, but this commodity is packed in a container weighing 127.3 lbs. gross, 122.3 lbs. net. The ratio of these two weights is shown in the card opposite Wgt. Factors. The first, 1.041, is the ratio of gross to net and the second, .961, is the ratio of net to gross. Since we are using the gross weight to figure the amount of tons needed we must multiply all our figures above by 1.041, giving us sp.ht. above freezing, .00025, below freezing .00014 and for heat of fusion .03614. These figures are now used to build up the card. At 30 F., where it is assumed the product starts to freeze, we put the latent heat of fusion, .03614, and then increase this by .00025 for each degree of temperature above that point. We next start at -5 F., the temperature of the sharp freezer, and put in 0. We increase by .00014 for each degree up to 30 F. This completes the card for boneless beef.

Monthly Load

With Specification Cards prepared for each commodity handled we are ready to calculate the commodity load for the warehouse during any given period. Three work sheets are needed for this purpose. Forms 4 and 5 are sufficient because Form 4 is used for cooler, freezer and sharp freezer products, although separate sheets are used for each class of space. Form 5 is a special record used for calculating the load due to the heat generated by fresh fruits and vegetables during the storage period.

Form 4 is shown as a sample of the heat load for products received in the coolers during the month of August. One commodity only is shown, but it illustrates how all receipts for the month are treated. The temperature at which it is received is not recorded for each lot, but is the average of all receipts for the month. It is estimated, for example, that 20 per cent of the eggs were received at the mean temperature for the month, 77 F., and 80 per cent at 40 F. The tons of refrigeration per case is found by taking 20 per cent of the figure for 77 F. and 80 per cent of the figure for 40 F. The result is .00244 tons per case and since 12,000 cases arrived we find the total tons for the month to be 29.28 for shell eggs. This same procedure is followed for all other cooler commodities. When all the entries have been made, they are totaled and we find that 380.15 tons of refrigeration were needed to bring the cooler products received during August down to room temperature.

The additional calculation made at the bottom of the sheet requires explanation. The calendar months of the year vary in the number of days so that if the calendar month were used in calculating costs the results would fluctuate and make comparisons difficult. We found it advisable, therefore, to consider the cost month as a constant throughout the year and to consist of 30.41667 days (356 divided by 12). To convert the refrigeration tonnage for any calendar month to what it would be in our cost month we make use of Table 4. August has 31 days, so the con-

TABLE 4—TABLE OF EQUIVALENTS USED TO CONVERT THE TONS OF REFRIGERATION FOR A GIVEN MONTH TO THOSE OF A STANDARD COST MONTH

Standard Cost Month: 30.41667 days in a year of 365 days.

Number of Days in Given Month	Conversion Factor for Receipts and Holds
28	1.08631
29	1.04885
30	1.01389
31	0.98118

(Continued on page 66)

The Practical Refrigerating Engineer

Reg. U. S. Patent Office

OPERATING • MAINTENANCE • NEWS
QUESTIONS AND ANSWERS

National Association Practical Refrigerating Engineers

PRESIDENT
E. T. QUINN
Los Angeles, Calif.

SECRETARY
EMERSON A. BRANDT

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40th N. A. P. R. E. Convention Held at Purdue University

PURDUE University features practical instruction, beneficial both to the youth and adult, Professor Harry Solberg told the 1949 Convention of the National Association of Practical Refrigerating Engineers. All of the attendants found this to be true in the convention program. The association met at the University November 8-11 and the larger portion of the subjects were presented by members of the faculty. Headquarters was in the beautiful and well appointed Purdue Memorial Union.

E. T. Quinn, Los Angeles, Calif.
President National Association
Practical Refrigeratinp Engineers

In his address of welcome, Frank Hockema, vice-president of the University, declared that there is no saturation point for education and this largest engineering school in the world provides education for all age groups. He invited the association to take advantage of the university facilities and to return for future meetings.

Professor Solberg, Head of the School of Mechanical Engineering, described the broad field of engineering training covered at Purdue and illustrated the close ties which have always been maintained with industry. Examples he gave are research and testing in the railroad and highway construction fields, the latter having saved millions of tax money by leading to improved highways. The N.A.P.R.E. Convention he said is typical of the adult education and cooperative work at Purdue.

Officers and Directors

President, E. T. Quinn, Los Angeles

First Vice-president, Howard Peterson, Yakima

Second Vice-president, Thomas O'Connor, New Orleans

Secretary, Emerson Brandt, Chicago

Treasurer, Leland Kenagy, Newton, Kans.

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Chairman of Educational Committee: H. G. Venemann, West Lafayette, Ind.

Chairman of Membership Committee: William Finnegan, Los Angeles

President George Koehne who presided at the opening meeting expressed appreciation to Dean Hockema and Professor Solberg. Then he presented his annual report including the following:

Report of the President

AT THIS 40th annual convention I hope you will pardon my looking back over our history because I believe it will prove profitable. It may seem more fitting if I remind you that my membership in the NAPRE extends back over 34 years. In 1909, J. B. Embrey, then chief engineer of the Shreveport Ice & Brewing Co., was visited in his plant by Joe Segers, chief engineer of the Texarkana Ice Co., to discuss operating problems that came up in their respective plants. These two were joined by John Lyons, engineer of another plant in Shreveport and Norman Register, a boiler inspector for the Hartford Insurance Co. At the end of the day it was recognized by these men that they had gained a considerable amount of knowledge from the day spent together. They decided that an organization should be created for similar discussions among engineers operating refrigerating plants.

The organization was set up at a meeting called for this purpose on January 30, 1910 and the first annual meeting was held in December of the same year. The success of the new organization was insured by a great deal of in-

tensive work on the part of the organizers and other interested engineers who joined with them. For a few years the activities were confined to the annual meeting and the work in connection with its program. Later more frequent meetings were held and in 1919 the formation of chapters began in various sections of the country. Soon the association also had members in other countries and the general pattern of operation became similar to that of the present day.

Howard Peterson, Yakima, Wash.
Vice-president National Association Practical Refrigerating Engineers

The constitution as originally set up defined the association as an educational group and the principal function has always been to provide a source of greater practical knowledge for refrigerating engineers. For the largest portion of the membership this program is carried on in chapters. Reports show that excellent results are being obtained in many locations where the association operates. Some of the smaller chapters, however, have reported problems in maintaining programs at the level they desire. I should make it clear, however, that this problem is not typical of all small chapters and I believe it is subject to satisfactory solution. Let us go back to the formation of the NAPRE. You will remember that 4 engineers came together and had an informal discussion of their problems. The resulting discussion among just these 4 men proved so profitable that the idea for the association was born.

It is apparent therefore, that good results are not primarily dependent upon the size of the group but rather upon what is done in the meeting. The method of accomplishing this good work has been demonstrated in our association on many, many occasions since that first meeting. The basic requirement is a certain amount of interest and planning on the part of just a few men. In fact only 2 or 3 interested individuals are required and their work is made much easier by taking advantage of the assistance and cooperation which our organization provides. This convention offers a good opportunity for representatives from the various chapters to discuss problems and adopt solutions which have already been put to use in other locations.

The publications of the association offer a considerable amount of material which can be the subject of very valuable discussions in chapter meetings and among engineers everywhere. Compliments are due our official magazine, ICE AND REFRIGERATION for the interesting and helpful articles and data made available to all of us. This is true not only of the NAPRE section, but also of the numerous other departments, and I sometimes wonder whether all of us are making full use of what it provides.

The Operating Data Book is now in its ninth edition. At first glance we see the great fund of engineering knowledge and information published in these books and distributed to all the membership. It comes to us automatically on publication. Sometimes I think that more of us would get greater benefit from this book if we had to purchase it as non members do. Don't misunderstand me, however, I am not recommending any change in the distribution procedure.

I do believe there is one great source of information in this book which many of us overlook. More than 100 advertisers gave brief information about their products and services. We should realize that these advertisers have a great amount of additional engineering information in their catalogs and other publications. A short note or a penny postcard sent to the advertisers would bring this information to us so that we would have it available for use at all times. More of us should take advantage of these opportunities and by this means the members, the association, and the advertisers would profit.

The NAPRE Question Box appears in both Ice and Refrigeration and the Operating Data Books. By publishing the questions and answers monthly the information is given more quickly to all members. In the Operating Data Books the question box is indexed and presented in compact form so that it can be used for reference over a long period of time. If you make a habit of checking the index you know how many times it is possible to find a complete answer for your particular operating problems in the Question Box section of the Operating Data Books. This is evidence of the great value which Professor Venemann and the other contributors have given us in this important department of the association program.

This year you have received special bulletins containing news of the association and information on subjects of interest and value to the membership. The number of bulletins published has been those which money and time would permit. They have been wholly prepared by the national secretary, but I know that he would welcome cooperation from interested members which would make more material available and permit more frequent publication.

Money has been mentioned and our financial situation needs some attention during this convention in accordance with a general letter sent to all the chapters some time ago. When the association was set up on a truly national basis, industrial refrigeration was booming. Income taxes were hardly noticed and manufacturers of refrigerating machinery had much more direct contact with their customers. There were plenty of people ready to contribute to the new organization and it wasn't all just promotion. One large contributor in the early 20's declared that the education and training provided by the NAPRE reduced his service problems and complaints so greatly that his contribution was returned many-fold to him.

The annual conventions rather quickly built up large exhibits of equipment which brought in excellent revenue for operating the educational program of the association. Later in 1930 changes occurred. There were no more cash donations and the machinery manufacturers association set up its own exhibit. Then hotels began to charge for exhibit space and in some cases for meeting rooms. The rental of separate exhibit space was no longer feasible or profittable. Meanwhile a few faithful friends of the association have been accommodated in exhibit space combined with the meeting room. Their contribution not only of money for the educational fund, but also of information to convention attendants is an important factor in this and previous meetings.

Meanwhile the Operating Data Book was set up and carries a considerable amount of advertising. This money pays for printing of the book and yields a certain amount of revenue. These two auxiliary sources of revenue, however, do not equal what used to be realized from direct contributions or net revenue on exhibits.

Now let us proceed with the dues situation. The member pays $7 dues and where he is a member of a chapter, $4 of this remains in the chapter. The remaining $3 is sent to the national organization. You will note that this sum is equal to the price of a direct subscription to the official organ.

The national association buys the magazine at bulk rates at a discount so the national organization primarily has been operating on the bulk rate discount for the magazine.

When a new member joins and pays $5.00 initiation fee, the chapter keeps $2.50 and sends $2.50 to the national organization. The latter, however, furnishes a textbook which costs from 70 to 90 cents more than the initial payment received from the member. If the new member receives the higher priced textbook his initial payment is $2.00 higher and the proportion is approximately the same. It has been suggested that the financial needs be fulfilled by a considerable increase in the initial payments by new members. This may seem attractive at first glance, but I wonder whether it would not prove discouraging to new members?

It is evident that there is some resistance among our members to raising dues at this time, but we have encountered the same increase in costs during the past 5 years that everyone else has. Practically everything else has already gone way up. Yet it is a fact that dues in the NAPRE are slightly less now than they were during the 1920's. For this reason I have discussed the situation briefly and recommend action on it at a later session of this convention.

The chairmen of two national committees are not able to attend the convention. Our very active chairman of the Membership Committee, William Finnegan exhausted himself between his many activities in the industry and his doctor ordered a rest recently. We are sorry he is unable to be here but we send him best wishes for his speedy recovery.

Chairman Erich Utescher of the Operating Data Book Committee is on a business trip to Panama and Cuba where his company has operations. We certainly appreciate what he and his committee have accomplished and wish he were here to receive our thanks in person.

Since Professor Venemann issued the invitation for us to hold our convention at Purdue, I have been looking forward to this meeting. What he has done for us here is in addition to his regular work as chairman of our National Educational Committee. We have been aware of this very valuable activity during the year. Now as the convention proceeds we will see and enjoy the results of a tremendous amount of additional effort he has expended to make this a memorable convention of the association. We acknowledge our debt to him and to his associates who are doing so much to make our meeting pleasant and profitable.

The annual report of the secretary then given by Emerson Brandt included the following.

Report of the Secretary

THE big record in membership this year was set by Los Angeles Chapter which took first place on total points and second place on percentage increase. The first place for percentage increase was won by Marion, Illinois Chapter which accomplished excellent results. In accordance with their habit the members of New Orleans Chapter again won honors by placing second on total points. Other chapters which earned recognition by persistent effort during the year are Detroit, St. Louis and Memphis. The new members who joined during the contest were equivalent to 17 percent of the membership at the first of the year.

The percentage of renewals at the end of the contest was equal to previous years which might be considered satisfactory from the overall picture. The tendency persists, however, to disperse renewals out through a long period of the year which multiplies bookkeeping and follow-up in the chapter and in the national office. Now that a new year is just beginning we urge all the officers of the chapters to cooperate in promoting prompt payment of dues. If better results were obtained in this department there would be more time to devote to constructive activities and our primary objective which is educational work.

Our members-at-large in other countries now face a difficult situation. To some extent this has been true since the beginning of the war because dollar exchange was difficult to obtain. Recognizing this fact the association in 1946 began to absorb the extra payment formerly charged for mailing the magazine to other countries. The recent devaluation of many currencies added more difficulty to the matter of securing dollar exchange. Some members in other countries have already presented this problem to us and some steps should be taken to find ways of alleviating the difficulty now presented.

Educational Program

Through the medium of the Member Activities column you are able to observe the content and to some extent the results of the educational programs in many of the chapters. The vigor of the chapters and their general success in all operations usually parallels the effectiveness of the educational program they carry on.

Newly-elected officers and members of the board of directors of the National Association Practical Refrigerating Engineers take time off following the ending of their 40th annual convention at Purdue University for a picture. Emmett Quinn, Los Angeles, Calif., new president of the association, was absent as he became ill en route to the meeting and was compelled to return to his home.

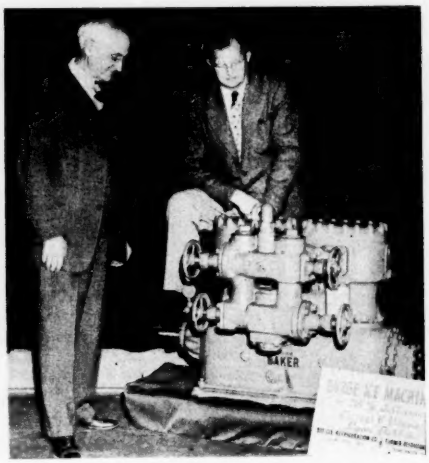
Shown in the above picture are: (seated, left to right), Howard Peterson, 1st vice-president, and Thomas O'Connor, 2nd vice-president; (standing) George Koehne, chairman, Board of Advisors; Bert McKenna, director; Prof. H. G. Venemann, Purdue, chairman, educational committee; A. R. Carlson, chairman, Board of Directors; A. J. Clay, director; Emerson Brandt, secretary; S. A. Cole, director; Leland Kenagy, treasurer, and Regis Gubser, director.

The large proportion of the chapters are accomplishing good results in this respect. Other chapters in some cases appear to face a measure of difficulty in maintaining the programs they desire. We have given what assistance we could from the national office through correspondence and this has also been true of some of the officers in the immediate territory. Soon we hope to visit a number of chapters and assist them to obtain what they want for enlarging their programs.

A glance back over the record of the year indicates that more chapters could make profitable use of the national Question Box. Some chapters and especially the Rio Grande Valley group bring their plant problems to meetings and submit them for group solution. Then the questions are forwarded to the national office to secure the additional data and information which Professor Venemann always provides or secures. This procedure benefits everyone and could be copied profitably by many more chapters. Some members-at-large are making good use of the Question Box and many more of them are invited to benefit from this valuable association service. In some cases the matter does not end with the question but we are able to secure an article for publication or a convention paper to provide an extensive analysis of problems thus presented.

At this convention we are fortunate in that we will enjoy an unusually fine program. For this we are indebted to

the numerous speakers from the Purdue faculty and the men from our own membership and industry. They are giving us the benefit of their knowledge and experience in a large field related to refrigeration and its applications. The extensive section of the program presented by the men of the Purdue staff was arranged by Professor Venemann. He did not, however, pass all the work along because he is presenting an important part of it himself. The other participant in the program arrangements was our national director, A. R. Carlson, many of whose recommendations appear in the final schedule and he also consented to participate.



Frank Welby of the U. S. Navy Department, Panama Canal Zone (right) held the honor of traveling the greatest distance to attend the 40th annual convention of the NAPRE held at Purdue University. He is shown here with Prof. H. G. Venemann of Purdue, who served as general chairman in conference plans, inspecting the display of the Burge Ice Machine Company of Chicago.

It is unfortunate that at least a majority of our association are not able to attend the convention and benefit from the program presented. The papers, however, will be published so that everyone can read them and have them available for future reference.

Operating Data Book

All of you have received your copies of the 1949 Operating Data Book. We trust that a number of you have already begun to make use of the material it contains. The book represents 6 months of rather intensive work on the part of a committee composed of the national officers and the following men: Erich Utescher, Atlantic City, Chairman—

L. L. Adams, Detroit
Walter Bernd, Sr. Washington, D. C.
Ed. A. Brown, Fort Madison, Ia.
A. M. Casberg, Edinburg, Tex.
Victor Crothers, Seattle
Leroy Etzel, San Francisco
William Finnegan, Los Angeles
John Glenn, Beardstown, Ill.
H. T. Holbrook, San Francisco
R. A. O'Neill, Corpus Christi
C. J. Romberg, Gainesville, Ga.
H. A. Simpson, Memphis
E. B. Urann, Chicago
Leo J. Vivien, New Orleans
A. E. Wegener, New Orleans
R. C. Walther, Seattle

It is a pleasure to acknowledge the good work of these men which has resulted in benefits to all the members of the association.

Provision is made for chapter participation in the sale of advertising for the book. New Orleans Chapter has continued to be considerably in the forefront of this activity. The other chapters which procured advertising are: Chicago, Los Angeles, Memphis, Pittsburgh, San Francisco and Tulsa.

Finances

The financial situation of our group reflects strenuous efforts made to offset rising costs by strict economy. This was assisted by the fact that the convention this year is close to national headquarters and travel expense is at a minimum. On the other hand, we were not able to maintain the personal contact with the chapters and membership at a level which we or they consider desirable.

We were able to make new arrangements for the printing of the Operating Data Book so that a saving of approximately 20 percent was made in this major item of expense. Happily this was done without any reduction in the quality of the book itself. Credit is due Harold McDermott, publisher of Ice and Refrigeration for arranging to have the book printed by the same printer who does their work and we received the benefit of their bulk buying power.

In the business organization of the NAPRE the secretary receives and accounts for the income while the treasurer draws checks to pay invoices approved by the president and secretary. (A summary of the income during the 1949 year was then given.)

The books of the secretary and treasurer have been audited and found in balance. The balance sheets and summaries together with supporting details are presented for the attention of the Auditing Committee.

General Operations

Mention has been made of the manual of officers duties approved last year. It has facilitated operations all along the line and we appreciate especially the cooperation of the officers in performing their work for the association. Although plagued by illness during the year President Koehne has been unfailing in his efforts to promote the welfare of the association and carry out fully the duties of his principal office. We are pleased to pay tribute to him and to the other officers for the excellent results they have accomplished. The work of Professor Venemann and Mrs. Venemann in connection with this convention will be evident to all of us as we go on to enjoy it. They have earned high praise which we are happy to express in behalf of the association and the convention attendants.

Behind the scenes has been the work of Merle McClure, Coordinator of Adult Education in the Technical Extension Division of the University. His associates and the staff of the Purdue Memorial Union have done everything they could to make our convention pleasant and profitable.

An annual report first of all is a summary of what happened during the preceding year. In this respect it is a brief history and since the events are already closed the report is somewhat fixed and rigid. The purpose is to take inventory to see exactly where we are and get ready to begin another year. It is a necessary and logical custom we follow but the work brings limited benefit if we confine it purely to history.

To produce the greatest value the report should draw lessons from past happenings and activities. It should show where opportunities for progress exist and might suggest avenues for exploiting them. Many such opportunities were evident when this report was prepared. A few suggestions for improvement in our operations have already been stated. There are others that need the attention of interested workers.

Opportunities

For instance, one member wrote recently that he wanted very much to attend the convention because he knew it would benefit him and aid him to become a better engineer. He pointed out that there would be corresponding benefits in the operations he carries on for his company. But his company has no appreciation of these facts, and the mem-

ber is unable to attend the convention on his own money. Probably the employer is wholly uninformed about the type of this convention and the educational program it provides.

This is just one avenue of progress which is open to us. Perhaps we should no longer call our annual meeting a convention. There may be a better, more descriptive name for it. At any rate, the employers of our members should be given well rounded knowledge about our meetings. Then they can evaluate the opportunities afforded their engineers and through them the plant operations in which they are engaged. This would be a significant project which can be accomplished if only a few members have the time and inclination to carry it through.

In most chapters there are many opportunities for progress and development which can be attained as evidenced by past results. If we take the best from several chapters as an example, the ideal chapter would accomplish the following during the coming year:

Increase membership by 33 to 50 per cent.

Reach 94 per cent of renewals by mid-February.

Run a good Question Box where members receive answers to their plant problems.

Conduct a well planned refrigeration course at every meeting.

Follow a good schedule of special events and speakers related to member interest.

Report meetings promptly so they can be publicized in the official magazine.

Keep the industry in its territory informed about its program and activities.

This is a composite picture. No one chapter is accomplishing all of it but some are doing most of this work. In other chapters a program of this type could be fulfilled if only a few members would make it their special interest. The personal rewards derived from their accomplishments would also be substantial.

There are many locations where chapters could be formed to accomplish much for the benefit of their members and the plants and operations they represent. Experience has shown that one member-at-large by enlisting several engineers to work with him and by following a guide already available can set up a chapter in a matter of a few weeks. In this short space of time it has been demonstrated that chapter organization can be completed and a good helpful educational program placed in operation.

These are a few examples of the possibilities and opportunities which open up before us as we contemplate another year in the association's operations. It is hoped that the inspirational atmosphere which surrounds our annual meetings will encourage some of you to take up the challenge they present to you.

As a final note we should emphasize the fact that the National Office also has a list of projects in which we shall seek to expand our service and accomplish more of benefit to the membership and the association as a whole. There is no dearth of worthwhile projects to engage our attention. The principle that should guide all of us is to push for larger goals and not dissipate our attention or energies on the details and minor problems of the moment.

Report of Treasurer

The report of Treasurer Leland Kenagy was then presented. He said it is the duty of the treasurer to receive the invoices approved by the president and secretary and draw checks for payment as well as keep record of disbursements. Mr. Kenagy then read a statement of disbursements during the fiscal year just closed. He continued, "The records of the treasurer have been checked and balanced with the books of the association and paid invoices and cancelled checks are available for the inspection by the auditing committee.

By unanimous vote of the convention, the reports of the officers were then accepted. After some announcements the first business session of the convention was then declared adjourned.

Educational Program

THE educational program of the convention was opened by Eugene Rytlewski, Westerlin & Campbell Co., Chicago who discussed those phases of refrigeration plant design and operation which are often overlooked or neglected. He said many of these factors appeared to be of minor consequence, but actually they have important effects on performance and economy of the plant.

Examples he cited are piping and connections not properly sized or installed for the job they are supposed to do. Frequently the capacity of a plant is increased and its equipment is thrown out of balance. For instance, the accumulator or suction trap may be too small after the capacity increase. This results in liquid carry over in the suction gas to the compressor which causes erratic operation and mechanical troubles.

The importance of properly sized automatic controls was stressed by Mr. Rytlewski and he described how they should be applied to the refrigeration system in a way to obtain trouble-free operation. In conclusion he emphasized that all details of design and operation in a refrigerating plant must be given proper attention if best results are to be obtained.

Modernizing Plants

The excellent results obtained in the modernization of an ice and cold storage plant were described by James Oldani, Central Illinois Ice Co., Springfield, Ill. He told how the coils of an old ice freezing tank were rearranged for shorter travel of the refrigerant and larger well designed headers were applied. These were connected to an accumulator of ample size with liquid feed under float switch control. Suction mains of ample size were also installed. After the change ice production was increased from 40 to 54 tons and at the same time an 8 x 8 compressor formerly used was no longer necessary in this section of the plant.

This compressor was utilized on the cold storage section of the plant to which two moderate size low temperature freezing rooms were added. In summary Mr. Oldani pointed out that the modernization program had increased capacity more than could have been obtained by adding a new compressor to the plant. At the same time unit power consumption was reduced about 30 percent. He clinched his argument for modernization by describing an ice tank in another plant in which a minor rearrangement of suction headers had eliminated the need for a 9 x 9 compressor while production was increased.

Education of Operating Engineers

"A Program for the Education of Operating Engineers" was described by Professor H. G. Venemann, Purdue University. He told of a survey he had made among members of the association in regard to the type of educational material considered best for use in the association. There was a great diversity of opinion among all those who replied. Professor Venemann said he felt it was well to go back to the fundamentals, that a man who wants to be a good engineer must understand general design and the operating principles of the equipment. He must keep abreast of information from all sources. In short, he must become educated by years of study and must be ambitious to succeed, as well as possess ability to learn.

The sources of study materials were reviewed and it was emphasized that the progressive engineer must be aware of the gaps in his knowledge and seek out the material and information he needs. This cannot be done overnight or automatically, Professor Venemann emphasized because several years of study under good tutelage are required.

A popular convention feature was repeated on the evening of the first day when the Bureau of Refrigeration In-

formation was presented to a large audience. Chief of the Bureau was Regis Gubser, California Consumers Corp., Los Angeles, who was assisted by George Bright, Detroit, A. R. Carlson, Chicago, Howard Peterson, Yakima and Professor Venemann, Purdue University. Numerous questions were presented to the Bureau by convention attendants. Not all of the discussion came from the panel of experts. Many of those in the audience had ideas also and took part in the discussion. Some of the questions presented were concerned with refrigerated versus hand purging of non-condensable gases, high speed versus low speed refrigerating compressors at low suction pressure, joint use of evaporative and atmospheric condensers and construction of low temperature rooms.

Third Session

A lecture-demonstration of Chemistry for the Refrigerating Engineer was presented by Dr. Walter Edgell, Professor of Physical Chemistry. In a simple, practical manner he explained the chemical analysis of water and how the treatment of it is suited to the water characteristics. The chemical reactions in the lime treating system were demonstrated along with the tests used to determine proper proportioning. Then the action of the demineralizing system was described and illustrated.

Corrosion reactions were demonstrated and it was shown how too much acidity or alkalinity affects the speed of corrosion. Also demonstrated were recommended methods for pH determination and testing for ammonia in brine. Dr. Edgell concluded with a discussion of the use of chromates to reduce corrosion.

Intense interest on checking and the care of electrical equipment was brought out by Professor R. B. Marshall of Purdue University School of Electrical Engineering when he explained "How to get electrocuted." He expressed the opinion that if more people knew how electrical injuries occur they would protect themselves. The huamn skin he declared is a good insulator when dry, but moisture breaks down its resistance and people should realize that low voltages are extremely hazardous under damp conditions.

The National Electric Code has been compiled from experience by experts and Professor Marshall emphasized that it should be followed in all electrical work. For instance, all electric equipment should be properly grounded and he explained how this is done. Fuses are installed for fire protection but cannot be counted upon if contacts are dirty or loose. Professor Marshall gave many practical suggestions for avoiding trouble with electric equipment and demonstrated the methods of checking to determine loads and characteristics of circuits.

The practical aspects of food freezing and handling were discussed by A. R. Carlson, chief engineer, Railways Ice Co., Chicago. He gave numerous points for cold storage and ice plant operators to utilize on problems posed by the addition of food freezing facilities to present plants. The requirements of the food processor were described and they included electrical, water and steam demands on a unit basis. The details of evaporator design were explained and practical aspects of air circulation over packages given.

Then Mr. Carlson traced load calculation and gave numerous useful factors. He suggested careful choice of the booster compressor and described methods of intercooling. Thorough sanitation was stressed and helpful information was presented on storage and shipping methods.

Fourth Session

THE fourth session of the convention was keyed to special demonstrations given in the Purdue shops and laboratories on the following day when the convention attendants inspected the welding laboratory, machine tool laboratory, the air conditioning system in the Hall of Music and the mechanical engineering laboratory. In all of these locations special displays were made and were explained to the group.

The fundamentals of good welding were discussed by Professor P. W. Case of the School of Mechanical Engineering who pointed out that welding has grown from a minor repair method into a large vital industry. He explained what a weld is and cataloged the various types of welding. With diagrams he showed how gas welding is used to produce proper joining of metals. Preparation is equally important with welding methods in obtaining good results for all types of welding. A number of diagrams were also used to explain various types of arc welding and the results obtained by it.

The importance of good maintenance methods was stressed by O. D. Lascoe, associate professor of manufacturing processes who discussed plant tools and their uses. The first consideration he said, is good environment accompanied by pride of accomplishment. Therefore a shop should be well laid out and equipped regardless of its size. The fundamentals of machine selection were explained and then Professor Lascoe took illustrations from the Purdue machine shop for methods of stock room and material storage, layout and equipment. A tool cart used in the shops was on display and its use in the plant was described. Professor Lascoe emphasized that hand tools should be kept in good condition and they do require skill and knowledge for proper, safe uses.

The uses and limitations of plant instruments were described in a thorough manner by Professor William T. Miller of the School of Mechanical Engineering. He explained that instruments are a guide to a good engineer who knows what should be happening inside the refrigerating system. He needs these instruments to show what is going on. The selection and care of the different instruments was described by Professor Miller who told how to adjust them and detailed numerous precautions to assure that accurate readings are obtained. He recommended liberal use of recording instruments because they show trends better and promote more accurate analysis of operations. Troubles with instruments he said spring from wrong application and installation or lack of proper care.

Fifth Session

WHAT management expects from the engineer and the plant he operates was discussed by Walter Kemper, Manager, Borden-Furnas Ice Cream Co., Indianapolis. The manager he explained is not ordinarily an engineer and therefore may not know how the demands of the plant are to be satisfied in detail. The engineer is expected to know plant design and how to maintain and operate the plant to satisfy production demands. The plans for a new plant start with production demands broken down into types and quantities of products. Then Mr. Kemper stressed the detailed requirements to produce ice cream and the various specialties made in the plant. He emphasized that the engineer should be alert to production needs and should always feature good housekeeping in the operations.

The plant that pays the most for accidents is the one which tries to get by without a real accident prevention program according to J. P. Ferron, Superintendent of Safety, Pacific Fruit Express Co., San Francisco. Mr. Ferron described the excellent results obtained through organized accident prevention work which have demonstrated that injuries to workmen can be greatly reduced. That such work is profitable he proved by consideration of the many direct and indirect costs resulting from accidents. Many of these he pointed out are not covered by insurance. In fact, most of the costs of injuries are a direct expense on industrial operation for which there is no recovery.

An intensely interesting and practical discussion on air conditioning for human comfort was presented by Professor William T. Miller, Purdue University. The selection of equipment for comfort air conditioning frequently is satisfactory he said but many engineers don't know what factors are involved in human comfort. Mechanism by which the human body produces energy and maintains a fixed temperature was described by Professor Miller and he told how the body dissipates sensible or radiant heat and moisture vapor. Air movement is important in wiping off the accumulation of warm air and vapor surrounding the body so proper air motion should not be neglected for comfort. Air conditioning engineers, Professor Miller believes, have paid too much attention to air temperature and not enough to radiant effects and to air motion.

A simple remedy for neglect of radiant heat effects, Professor Miller described is to remove the insulation from ducts passing through occupied spaces. Excess radiant heat is less a problem in heating work than it is in comfort cooling. On the other hand, large radiant losses from the body are distinctly uncomfortable. In summer cooling much more consideration should be given to increasing comfort by utilizing the cool surfaces for radiant effect. Professor Miller urged engineers to step away from conventional methods, to employ ingenuity and use every possible method for obtaining desired results.

Final Session

THE final session of the convention was called to order by President Koehne on the morning of November 11. The report of the Credentials Committee was presented by Kenneith Addison, Tulsa. There were 136 chapter votes and 20 member-at-large votes represented in convention. according to the report by Mr. Addison which was accepted by vote of the convention.

The Auditing Committee, John Meadows, Chairman, Levelland, Texas, reported that it had examined and checked the financial records of the association for the period from October 15, 1948 to October 15, 1949. Certified statements of remittances were received from the chapters and these had been checked with the records of national income. The income from the Operating Data Book and the convention exhibits had been verified and the miscellaneous income had been checked.

Expenditures were checked with the approved bills and the statements of income and expense presented by the secretary and treasurer were certified as correct. Then Mr. Meadows read the balance sheet for the period as prepared by the committee. By vote of the membership the report was accepted as presented.

Resolutions

In a report of the Resolutions Committee presented by Chairman E. G. Ford, New Orleans, appreciation was expressed to Purdue University and its Technical Extension Division for the numerous services and contributions which had made the convention such an outstanding success. Thanks were also expressed to the faculty members and the speakers from the association and the industry who had presented such a valuable educational program.

Tribute was paid to the national officers for their effective work during the year and best wishes were sent to Emmett Quinn for his speedy recovery from illness suffered on the way to the convention. Special tribute was paid to Professor and Mrs. Venemann for their most effective work in planning the convention, as well as the manner in which they had handled the numerous affairs of entertainment. Tribute was paid to Dean A. A. Potter for the fine inspirational address presented at the annual banquet. In conclusion the resolutions stated—

"The years inevitably record the passing of members and friends whose characters and personalities have enriched our lives. Their work in the association has benefited all of us in many ways we gratefully acknowledge. Those we honor in memory at this 1949 meeting are:

Olin Campbell, Los Angeles
H. G. Ferguson, Fairfield, Ill.
Paul C. Hahn, San Francisco
Luther C. Hall, New Orleans
H. H. Hawley, Fresno
Theo Huetteman, Detroit, Mich.
Frank Keeser, Caseyville, Ill.
Gordon MacNaughton, Oliver, B. C. Canada
Jos. A. Martocello, Sr., Philadelphia
Fred McCandlish, Drexel Hill, Pa.
Teofil Piotrowski, Detroit
E. D. Thompson, North Platte, Nebr.
John B. Walker, Jr. Pittsburgh, Pa.
Alva Younkers, Sumner, Wash.

"While a relatively young man, Fred McCandlish was elected president of the association in 1927. His service in the refrigeration industry included a number of important positions and in later years he operated his own business. This prevented his regular attendance at recent conventions but he retained his active interest in the association throughout his life.

"At this convention we miss Joseph Martocello, Sr. who has been a faithful attendant and exhibitor over a period of a quarter century. He contributed much in a material way and to our educational objectives. His passing is a loss we feel keenly. We will miss these men and the other veterans of the industry and the fellow members whose personal association we can no longer enjoy though in memory they remain with us."

The resolutions were unanimously adopted by the convention after which all stood in a moment of silent tribute to members who had passed away during the year.

Nominating Committee Report

The report of the Nominating Committee was presented by Chairman A. M. Casberg, Edinburg, Texas. At the conclusion of the report it was accepted by vote of the convention and by similar vote the secretary was instructed to cast a single ballot for the officers thus nominated. The secretary complied and thus the officers were elected as listed at the beginning of this report.

Retiring President George Koehne then installed the new officers. He called attention to the association motto: morality, economy, competency and suggested that it should be the constant obligation of all officers and members. Then he congratulated the new officers and turned the meeting over to First Vice President, Howard Peterson.

Mr. Peterson replied with thanks for the new officers and expressed regret that illness had prevented the attendance of President Emmett Quinn.

With fitting tribute in which he reviewed the past work of retiring President Koehne, William Reinhard called on all members to follow the example set by Mr. Koehne. He said that all engineers should devote as much time as possible to personal improvement and work beneficial to their chosen activity. Then in behalf of the membership an illuminated testimonial was presented to Mr. Koehne. He responded with heartfelt thanks and said that he intended to continue his active work in the association in the future.

Reinhard Made Honorary Member

On motion of the Board of Directors, William Reinhard was elected to honorary membership in the association. The presentation was made by Walter Bernd, Sr., Washington, D. C., who said that he had known Mr. Reinhard since 1910 in the industry and in association activities. He recorded numerous activities and services performed by Mr. Reinhard. Frequently he said honors are given for scientific

or material achievement but what counts for more is honor given to a man for what he is. This type of honor he said was being conferred on Mr. Reinhard. In reply Mr. Reinhard expressed appreciation and told how much he valued the years of friendship he had enjoyed in the association. At the same time he paid tribute to the large amount of engineering knowledge gained in years spent in the association.

Invitations to the 1950 convention were presented in behalf of Dallas, Texas by Warren Cunningham of that chapter and Los Angeles by Regis Gubser of that chapter. A preference vote was then taken in which the convention gave the majority of votes to Los Angeles. In announcing the results the fact was stressed that Los Angeles had reported to the 1948 convention that it wished to prepare for the 1950 convention in Los Angeles and had already made a number of preparations (subsequently the board set the 1950 convention for Los Angeles).

The following recommendation for amendment to the By-Laws was read by Chairman A. R. Carlson of the Board of Directors.

"The need for increased revenue which has been apparent for several years was called to the attention of the membership at our 1948 convention and was discussed with the chapters in a letter from the president during the past two months. Responses from the chapters were overwhelmingly expressed in favor of increasing the dues as compared with other courses that might be considered.

In a meeting of the Board of Directors on Monday, November 7 therefore it was unanimously voted to submit to this convention an amendment to the By-Laws. That Article II, Section 3 be amended to read as follows:

"The annual dues for Active and Associate members of the association shall be a maximum of $8.00. Each chapter shall pay to the National Organization annual per capita dues of $4.00 for each member in good standing. All dues are payable in advance of the membership year."

There was a considerable amount of discussion in relation to this amendment and strong sentiment was expressed to increase the dues somewhat more so that the association could widen its services. One chapter representative spoke against any increase. The question was then put to a vote and the opposition conceded that it had received much more than a two thirds majority. The motion was declared carried as an amendment to the By-Laws by Chairman Peterson. There being no further business the meeting was declared adjourned.

Entertainment

An enjoyable program of entertainment was presented for the entire convention group and special events were also given for the ladies in attendance. The feature of the general program was the annual banquet on Wednesday Evening. An excellent meal was served and then Dean A. A. Potter of the Purdue Engineering Schools spoke on The Past and The Future.

America is great and creative Dean Potter said not because it has a monopoly on genius, or because it has most of the world's resources; but rather by reason of the fact that for 160 years our country has had a government which has encouraged us to invent more, to produce more, and to have more than any other people in human history.

The key to our future he said is greater and more economical productivity. If we produce more at low cost our standards of living will rise as we shall be in position to buy more. The greatest need at present is to make the public conscious of the dire necessity of creating more wealth by greater production. We have never produced enough to supply our own people.

On the final evening of the convention an excellent entertainment event was presented. It included enjoyable music, movies of an outstanding football game played by Purdue and the excellent pictorial history of Purdue entitled "One Brick Higher."

Special events arranged for the ladies included an enjoyable luncheon and two unusually fine lectures on interesting phases of foreign affairs. They also had an opportunity to inspect the Home Economics School and the Purdue Memorial Union.

Member Activities

Pittsburgh

By Louis Mantz

THE first meeting of the month was a plant visit to the Grennan Bakeries. The wives and friends of the chapter were invited and over a hundred enjoyed the meeting. They were welcomed by K. P. Day, Superintendent and Ray Leitholf, chief engineer of the plant. President Frank Sams responded in behalf of the chapter. Then the group enjoyed a program of songs led by David Jenkins and accompanied by Joanne Day. A motion picture in color entitled "Operation Cross Roads" was shown. It was an interesting color movie of the atomic bomb tests in the Pacific.

Then a number of games were played in which the members won fine prizes in the form of certificates for a wedding cake, an anniversary cake and other delicacies produced by the Grennan Bakeries. Mr. and Mrs. Leitholf led a cake-walk in which the attendants joined, and Miss Mantz, the secretary's daughter won the prize which was a beautifully decorated cake with roses and the name NAPRE worked into the decorations. After an inspection trip through the bakery appetizing refreshments were served. We are certainly indebted to Mr. Day and his company for an outstanding evening.

We are happy to report that Frank Trost has recovered from his lengthy illness and attended our meeting.

The new officers elected to serve the chapter during the coming year are:

President, George Kessel
First Vice President, James Gallina
Second Vice President, Eugene Luitz
Secretary, Otto P. Knoch
Treasurer, Louis Mantz

After 25 years service as secretary-treasurer, Mr. Mantz requested that he be relieved. He suggested that the two offices be separated and that he would assist the new secretary until he felt able to handle both offices. Secretary Mantz expressed appreciation for the vote of thanks and the tributes paid to him for his quarter century of service to the chapter.

Mr. Sams turned the gavel over to his successor, President Kessel and thanked the members for their cooperation during the past year. President Kessel then took charge of the meeting and expressed the appreciation of the chapter to the retiring officers. There was a general discussion of the chapter program and its operations in which a number of members joined. The meeting was concluded with the serving of refreshments.

Memphis

By Charles Conley

The first meeting of the month was devoted to the subject of packing. Fred V. Bailey, district manager for the Garlock Packing Co., assisted by James L. Frank, representative for this section discussed all types of mechanical packings. They gave a history of the development of packing for different applications and explained what types should be used for rotating shafts and what kind should be used for reciprocating rods. The special advantages of different kinds of packing were explained. The importance of proper installation and care of the packing during the early period of use were stressed. On display was Garlock's full line of mechanical packings, gaskets, gasket material and other products for use in the industry.

The evening was concluded with appetizing luncheon, refreshments and cigars which everyone enjoyed fully.

We were pleased to welcome Carter Dozier, chief engineer of the Shrine Building and Dexter Gibson of the Simpson Engineering Co., to membership.

Minnesota

By Richard Bonney

Minnesota Chapter opened its fall season with a meeting at the Nicollet Hotel in Minneapolis. A large group was in attendance and we first enjoyed an excellent dinner.

The special speaker of the evening was Van J. Sparks of the Frick Co., whose subject was "Refrigeration Cycle Replaces Steam and Well Water in Concentrating Liquids." In a talk illustrated by slides, Mr. Sparks described a new process now being used for concentrating fruit juices in which a refrigerating machine instead of a boiler is used to heat the citrus juice and drive off the excess water, the same refrigerating machine being used to simultaneously cool and condense the water vapor—all under a vacuum. The heat balance of this closed cycle is very good, only 70 gallons of water being needed per minute to carry away extra heat, through a small supplementary condenser.

The juices are evaporated very quickly at a temperature of 60 F. and the flavor is not modified. The vitamin and good values are preserved. After the addition of fresh juice and pulp, the concentrate is frozen and marketed in the frozen condition. On reconstituting, the flavor is such that it cannot be told from fresh juice.

The operation is accomplished in a special triple effect evaporator in which the water is evaporated in three stages by the discharge ammonia gas at 105 deg. This operation condenses the ammonia which is then used to cool and condense the water vapors in a condenser shell; the ammonia gas returning to the refrigeration machines.

Besides the advantage of evaporating at very low temperatures, it is claimed that the cost of power per unit of evaporation with this system is much less than with the usual steam systems. The process is claimed to be equally applicable to concentrating milk, other fruit juices, eggs, sugars, chemicals, etc., since the evaporation temperature can be anywhere between 40 and 160 F. and the cycle can be used for distillation.

Dallas

By D. F. Bancook, Sr.

We have had a number of good meetings this fall following our summer recess. The schedule was opened on September 24 with a discussion on condensers which was led by Obert Irvine, Southland Ice Corp., who presented an excellent paper on the subject. Valuable information about condensers was also given by Jim Moss, York Corp. We always get a lot out of his knowledge and experience in refrigerating work. President Leon Riener was chairman of the meeting for the first time since his injury in the spring and we were glad to have him back with us.

At the next meeting the article on car icing in Ice and Refrigeration was discussed under the leadership of L. P. Reiss. He holds a basis patent on this principle and we gained a great deal of information from his discussion.

The meeting of October 24 was a plant inspection trip which was arranged by Warren Cunningham of the Dallas Power and Light Co. He arranged for us to inspect the interesting new addition recently constructed to increase their power production facilities.

Delegates chosen to represent the chapter at the convention were J. Ed Lawrence and Warren Cunningham with D. F. Bancook, Sr., and Norman Hopkins as alternates.

Rio Grande Valley

By Armin Doneis

We were pleased to receive greetings from Randall Anderson who is now located at Sanger, N. D. In the educational session John Muller, instructor led the discussion on a refrigeration problem presented to Professor Venemann. It dealt with the question of the proportion of conveyor motor input which eventually shows up inside a storage vault in the form of heat energy and requiring removal by refrigeration. It was clear from Professor Venemann's reply that all of the conveyor motor's input appeared eventually as added heat released inside the storage vault. All present seemed satisfied with the explanation and felt they had gained new insight.

The next meeting was an inspection trip to the plant of the Edinburgh Ice and Cold Storage Co. All official business was dispensed with except for one important item. Vice President John G. Muller announced that today was the thirtieth wedding anniversary of Mr. & Mrs. A. M. Casberg. On behalf of the chapter he expressed the best wishes on this special occasion, and he presented Mr. Casberg with a gift box of chocolates which he was to take home to Mrs. Casberg as consolation for his absence while he was serving as host during an inspection tour of his plant by Rio Grande Valley Chapter. Mr. Casberg graciously accepted the gift for Mrs. Casberg and made the members welcome to inspect the equipment and remain for liquid refreshments.

Mr. Casberg conducted us on a tour of inspection through the engine rooms, tanks, storage vaults and car icing docks. The article on pages 21 and 22 of the October issue of Ice and Refrigeration describes what we saw in the engine rooms. The car icing dock arranged for simultaneous icing of 20 refrigerator cars interested and impressed the men, and much that they saw in this plant gave them new ideas and topics for interesting discussion. We were all well impressed by the model housekeeping in this large ice plant. After the shop trip we enjoyed liquid refreshments and talked shop and swapped experiences until late into the night.

A letter from Chauncey Stuntz in Charles, S. C., told us that he missed the opportunity to attend our meetings and engage in discussion of refrigeration plant operation. He emphasized the importance of the NAPRE to the industry and wanted to cheer us on in the good work. John Muller announced that the LaPalma Power Plant of the Central Power & Light Co., in San Benito, Texas was holding an open house the following week and invited all of use to visit this newly enlarged plant.

San Francisco

By F. H. McLaughlin

L. I. Denton, veteran member of the N.A.P.R.E. since 1924, was presented with an honorary life membership, in the association at the October 12 meeting of San Francisco Chapter.

L. I. Denton

Mr. Denton was introduced by Andrew Hope, President of Chapter No. 1, and then presented with the award by William Edis, Past President of the Chapter.

In making the presentation, Mr. Edis recalled that Mr. Denton had been sixteenth President of the Chapter and that his term of office had occured in 1937. Mr. Denton had also served on the Educational Committee of the National Association. Before his retirement, he was Mechanical Engineer for the Pacific Fruit Express Co. Among his wide-spread interests at the present time are his family and summer home in the Santa Cruz Mountains in California.

Mr. Denton, in acceptance, pointed out that he has obtained an infinite amount of satisfaction by being a member of our Association and stated, "The more a member puts into the Association, through diligent committee work and sincere interest, the more good he will obtain from the Association". He called attention to the fact that a very large number of N.A.P.R.E. members, by reason of being members, have succeeded in becoming outstanding personalities in the Refrigeration Industry. He spoke of his pride in being a member and his happiness to receive such an expression of the Association's regard.

The program for the evening was presented by Donald Bechtold of Slick Airways. Mr. Bechtold presented a very fine sound color film entitled "The Story of Air Freight." This subject proved to be closely allied with our own refrigeration industry, having to do with the preservation and prompt handling of perishables.

The meeting of October 26 featured an illustrated lecture by Thomas A. Marshall, manager of the San Francisco office of the York Corp. Mr. Marshall presented a topic entitled "An Exposition of Modern Methods and Processes in the Handling of Stored Fruits."

Up to date blast type cooling units were shown and discussed from a design and construction standpoint. Various helpful suggestions, based on a wide experience, were brought out by Mr. Marshall, that referred to the proper types of refrigerant feed, the placing of shut-off valves and the selection of the air distribution system. Methods of product handling and fruit storage practice were thoroughly covered. This was one of our finest programs.

Chicago

By E. B. JONES

The regular refrigeration course has been continued by Instructor Eugene Rytlewski. At the first meeting of the month he discussed condensing water connections and controls, oil separators and non condensable gas purgers. He sketched the cooling water lines of a typical plant on the blackboard and explained that condenser water connections should be ample in size but it is a mistake to oversize water control valves. A number of other cautions and suggestions for a good system were given.

At the following meeting Mr. Rytlewski showed how refrigerant headers, lines and mains should be designed. He suggested that suction mains should be limited to a refrigerant gas velocity of 2500 ft. per min., while in the suction headers this velocity should be reduced to 1,000 ft. per min. All control valves should be sized on the basis of capacity and the pressure drop through them.

The special speaker was R. F. Lamb of Schnacke, Inc., Evansville, Ind. Mr. Lamb gave an illustrated talk on the manufacture and application of refrigerating compressors made by his company and had a cut-away model of one of the compressors on display for inspection by the attendants.

He described and illustrated the method of manufacture and the design features of the compressor. The line includes 2 cylinder vertical machines and 4 and 8 cylinder "V" type machines. To the largest extent possible the parts of all these compressors are standarized which facilitates economical manufacture and also reduces the inventory of repair parts in the user's plant. The company has confined manufacturing to Freon 12 compressors but is working on ammonia machines to be added to the line. Mr. Lamb answered a number of questions by the attendants and at the conclusion of his talk was given a rising vote of thanks.

At the second meeting of the period Frank Ford, Plan Examiner, Heating and Ventilating Department, City of Chicago gave an excellent analysis of the local ventilating code and told how designers and installers could best meet its provisions. He explained how construction plans are referred to the various departments having jurisdiction and why it is necessary that they approve plans. Mr. Ford said that 65 percent of all plans submitted are rejected the first time. He told why this rejection commonly occurs and explained how to draw up acceptable plans and specifications. His talk was informal but proved to be intensely interesting and very helpful especially to the engineers who have the responsibility of designing and installing air conditioning systems.

Los Angeles

By FRED HERR

Los Angeles Chapter conducted its October 12 meeting in two parts. The preliminary class, under the direction of Elmer A. Johnson, and the business session, was held at the Terminal Club. Fifty-three members introduced themselves at the roll call. Two new members were accepted into the chapter; Ralph W. Haskell and Harold M. Rothrock, and a business session followed.

At the conclusion of the business session, the members adjourned to the Fourth Street plant of the California Consumers Corp., to observe a demonstration of the latest welding technique. The program was conducted by F. O. Hansen of the Marquette Mfg. Co., Minneapolis, Minn. In commentary preceding the demonstration Hansen covered the history of welding, development of equipment and various types of welding rods. Inasmuch as many of the duties of refrigeration engineers involve welding at different times, the program proved of considerable interest to the NAPRE members attending.

An impromptu quiz program, presented when the scheduled speaker of the evening could not appear, proved highly entertaining to an attendance of some 75 members of the chapter at the November 2 meeting in the Terminal Club.

Ed L. Nelson, called upon by President Rudi Kettler to serve as quiz master on a moment's notice, came through with a surprisingly entertaining program of an hour's duration.

Ed chose as a panel of experts to answer questions from the floor, four bona-fine refrigeration and air conditioning authorities whose range of practical experience covered virtually all phases of the industry including instruction technique, installation engineering, plant operation and equipment supplying. These were Alexander M. Shears, refrigeration instructor of the Wiggins Trade Technical Institute; John J. Bethea of Associated Refrigeration Engineers; Mike Julius of California Consumers Corp.; and William F. Losch, branch manager of the Frick Co.

This type of program had always proved extremely popular the several times it was presented at chapter meetings in the past. This time was no exception. Nelson started the ball rolling by explaining a problem that had come up in one of the Union Ice Company plants during a recent inspection trip with one of the top company executives from San Francisco. The problem dealt with how to tell definitely whether a gauge glass is full or empty.

The discussion on this subject lasted for a full 30 minutes as panel members and audience alike took the subject apart literally and submitted four or five ways in which the plant engineer should be able to ascertain the condition of the gauge glass. The details were far too copious to permit retelling in this report. Suffice it to say that, at the close of the discussion, two of the panel members and three members in the audience, were firmly convinced that their method of gauge glass appraisal was the logical one.

President Rudi Kettler, seated for the time being among the hoi polloi in the audience, then precipitated a spirited discussion with the following question:

"In an air conditioning system, with humidity at 30 per cent what should the temperature be to provide a comfortable atmosphere?" Kettler explained that this had come to his attention recently when he entered a department store and noticed that the temperature was actually cold, or, at least, considerably below the comfort stage.

Mr. Shears, called upon by Quiz-master Nelson for the reply, explained that this feeling of coldness or discomfort upon entering an air conditioned establishment is caused by the rapid dehydration of the human body. Different people, he said, react to room temperature in an air conditioned place in different ways. To some, he said, the room may feel cool, to other comfortably right, depending upon the individual degree of bodily dehydration. Mr. Shears' solution to the problem posed by Kettler was to put more moisture in the air, maintain dry bulb temperature at about 72 F., and keeping the wet bulb fairly close to the dry bulb.

Nelson interposed here to point out that setting the temperature arbitrarily at 72 degrees would not please everyone, particularly not the women, as most women, he said, would find 72 degrees too chilly, due to the lighter clothing they wear.

The concensus of opinions ultimately reached the solution of setting the system at 50 per cent relative humidity, with 63 wet bulb and 72 dry bulb.

Some dozen or so "tricky" questions were propounded, some of them quite evidently in an effort to catch the savants on the expert panel off guard. But in most instances the quartet was fully capable of coming up with a plausible answer, supported at times with a nugget of information from the apparently inexhaustible fund of knowledge on the subject of refrigeration which Ed Nelson seems to possess.

The business session opened with introduction of members and guests. Among the guests was G. M. Swanson of San Francisco Chapter. President Kettler appointed the following as members of a nomination committee to recommend a slate of candidates for 1950 chapter officers, to be voted upon at the December 7 meeting: William R. Burnett, E. L. Nelson, Regis Gubser and Charles S. Rush.

Announcing that official notice had been received from national headquarters of the chapter's third successive victory in the membership campaign, Mr. Burnett, chairman and sparkplug of Los Angeles' campaign, presented final figures on membership: Signed up during the 1948-49 effort: 108 new members, making a grand total in the chapter, as of November 1, of 325.

One final membership drive prize was awarded, a $25 bond to Elmer Johnson of the California Consumers Corp. One of the conditions of the local drive was that, of the three teams participating in the drive, the one obtaining the fewest new members, would buy a $25 bond, which would be presented to one of the members of the winning team. The Independents team was low and each member contributed $1.00 to buy the bond, which was awarded to Johnson, a member of the winning California Consumers Corp. team.

Burnett then proceeded to pose quite a job for Frank R. Elliot of the Union Ice Co. (who will most likely be the 1950 chairman of the membership drive) by brashly declaring that the chapter should try to push its total mem-

bership to 500 before October, 1950. This would mean 175 new members, with Elliot figuring out ways and means of how to do it.

A start on this job was made at the November 2 meeting when seven new members were approved. These were: Bruce Salee of aPrnell Ice Cream Co.; John T. Haldeman, Kenneth G. Ambrose, Bert Kuhlman and Robert Hann of the Robert E. Mann Co.; Frank E. Murray, air conditioning installer; and W. K. Krack, factory representative of the Sporlan Valve Co.

Ed L. Nelson, committee chairman, reported that the 1949 Jamboree and Pre-Convention Rally was to be held November 30 in the Rainbow Room of the Mayfair Hotel, Los Angeles, with attendance restricted to 300.

N.A.P.R.E. Question Box

NOTE: H. G. Venemann, Chairman of the Educational Committee, has agreed to answer through this column all questions asked by members of the N.A.P.R.E. Please send your questions to him care of Purdue University, West Lafayette, Ind.

Condensers in Parallel

Question No. 829: To increase condenser capacity in our plant, three stands, (12 pipe high and 18 ft. long), of double pipe condensers were added to a shell and tube condenser. The double pipe condensers were mounted so that the bottom pipes are level with the bottom of the shell and tube condenser, and both condensers have liquid receivers with equalizer lines between them. The only way these condensers will work together is by throttling the inlet gas to the shell and tube condenser. If the inlet gas valve is wide open the condenser pressure will rise to 195 pounds but by throttling the pressure will drop to 165 pounds and stay there. How can we correct this installation, and why do the condensers act as stated above?—W.N.T.

ANSWER: I think the cause for the unsatisfactory operation of a bank of double pipe condensers in parallel with a shell and tube is easier to find than a simple means of correcting the difficulty.

The double pipe condensers probably have a 1¼ in. inner water pipe and a 2 in. outer pipe with the condensing gas in the annular space between the two pipes. In all probability, the gas enters the condenser coil at the top and the liquid leaves at the bottom so that with three stands 12 pipes high and 18 feet long we have three parallel circuits which are 216 feet long with 11 return bends in each circuit. The question does not give any information as to the capacity of the plant in operation, but judging from the size of double pipe condensers and the fact that additional condenser capacity was purchased, the plant must be a fairly large one. That means, for the double pipe condensers to take a fair share of the load, there will be a quite high entering gas velocity to the condensers. Now when we have a high gas velocity combined with a long length of travel, and with a number of return bends we can expect an appreciable pressure drop between the inlet and the outlet of the condenser.

In contrast to this, the shell and tube condenser is a relatively large diameter vessel, which is probably not more than 18 feet long, and even if the gas inlet should be at one end of the condenser and the liquid outlet at the other end, the gas travel length will simply be the diagonal from the inlet to the outlet which would not be very much over 18 feet. Furthermore, there is a considerable space between the tubes in the shell and tube condenser so that the area of the gas passage in the shell and tube as compared to the area of the gas passage in the double pipe condenser is very much greater. One would therefore expect a very negligible pressure drop between the gas inlet to the shell and tube condenser and the liquid outlet.

Now, what happens when we parallel these two types of condensers? Supposing that from the relation of the surfaces between the two types we'd expect the shell and tube to carry half the load and the double pipe to carry the other half of the load. Under those conditions, it might be that the pressure dropped through the shell and tube condenser would be a tenth of a pound, and for that rate of gas flow the pressure drop through the double pipe condenser might be two or three pounds, but both condensers are connected to the same discharge line, i.e., they take the gas from the same source so that the pressure at the inlet to the two condensers is identical. At the liquid outlet, it is stated that the two liquid receivers are equalized, so that the pressure in the two receivers will be just about identical. Now, quite obviously, you can't have an inlet pressure of 165 lbs., a pressure drop of a tenth of a pound through one parallel circuit, and a pressure drop of 2 or 3 lbs. through the other parallel circuit, and still have the same outlet pressures for the two condensers.

The only thing that can happen is that instead of half of the gas flowing to the shell and tube condenser, and half flowing to the double pipe, there might be 90 per cent flowing to the shell and tube and 10 per cent to the double pipe, or whatever relationship would give identical pressure drops between the inlet and outlet of the two different kinds of condensers. Now that means that the double pipe condenser is doing very little work because the gas doesn't get through it, and if they will check it, they will probably find that there is relatively little temperature rise in the water passing through the double pipe condenser and a large temperature rise in the water passing through the shell and tube. When they throttle the gas valve to the shell and tube condenser, they increase the pressure drop between the discharge main and the outlet of that condenser and thereby divert more of the discharge gas through the double pipe. As to actual corrective measures, they've already taken one, namely throttling the line to the shell and tube condenser. If that works satisfactorily, why look any further.

Another solution would be to provide more and shorter passages through the double pipe condensers in order to reduce the pressure drop, to more nearly what would be found in the shell and tube. For example, instead of running the gas through 12 pipes in series, it could be run through the 12 pipes in parallel giving 12 times as many passes, each of one-twelfth the length and entirely doing away with the return bends. This solution doesn't sound very practical because, obviously, the double pipe condensers would have to be entirely rebuilt and that probably wouldn't pay.

Still another solution might be to place the double pipe condensers above the shell and tube and run the two sets of condensers in series, that is, run the gas into the double pipe and then from the double pipe to the shell and tube and finally to the receiver. That would take some reconstruction work but at least the double pipe condensers wouldn't have to be rebuilt. I am assuming that the plant is not so large but what the full amount of discharge gas can be run through the double pipes without too much pressure drop.

I haven't actually encountered this exact situation, in my own experience and my analysis is based simply on the behavior of parallel fluid flow circuits and the analogy to parallel electric circuits.

Possibly, some of your other readers have encountered this same difficulty and found a different and better solution than has herein been suggested.—Leon Buehler, Jr., Creamery Package Mfg. Co.

Protection of Agitator Motors

Question No. 830: In our climate we have a problem of keeping the motors in brine agitators or circulators dry. When the tank is frozen down and the agitator is shut

down for long periods, condensation forms on the cold agitator and motor parts. This wets windings and soaks slot insulation and tends to cause electrical break-downs when the motor is again placed in operation. How can we avoid these troubles?—R.V.C.

ANSWER: This question was sent in by the Rio Grande Valley Chapter and with it was an answer for which your Question Box editor is truly grateful.

It was suggested that the agitator motor and frame be covered with insulating blankets to seal out humid air as much as possible. Some operators use a canvas hood over the motor with a small light bulb inside to warm the air. Tom Barlow of the Rio Grande Valley Chapter pointed out that "thermoplastic covering materials developed during the war for protection of machines in storage have been found very successful for this purpose. They can be slit open with a knife and used repeatedly because a simple heating tool can reseal the slit each time."—H.G.V.

Bad Effects of Weak Brine

Question No. 831: What are the bad effects of allowing the brine to become weak in brine cooling tanks and brine circulating systems? I know that weak brine in a shell and tube cooler may freeze and split the tubes but what are the bad effects of weak brine where coils of various types are utilized for chilling the brine?—L.M.T.

ANSWER: There are two important bad effects on coils or tubes of using weak brine, vis., greater corrosive action and reduced heat transfer when freezing. The causes of corrosion as given in A.S.R.E. Circular No. 10 are as follows:

THE CAUSES OF CORROSION

"The electrochemical theory of corrosion of metals, which now is generally accepted, assumes that when a metal is immersed in an aqueous solution there is a tendency for the metal to go into solution in the form of ions having one or more charges of positive electricity. At the same time the solution gives up atoms which, when they were combined in solution, carried an equivalent number of positive charges. Ordinarily, in the case of refrigeration brines, these atoms are hydrogen, and they form an invisible film over the surface of the metal. This film tends to retard further progress of the reaction, (1) by separating or insulating the metal from the solution, and (2) by increasing the solution pressure of the hydrogen film which has become thicker, thus promoting an equal and opposite reaction. If no other factor entered the picture, it would be logical to expect that corrosion would stop at this point and would not become serious from a practical standpoint.

"However, this protective film of atomic hydrogen may be, and usually is, removed in one of the following ways:

(1) Oxygen which is present in solution in the brine may react with the hydrogen to form water which mixes with the rest of the liquid.

(2) The hydrogen atoms may combine among themselves to form molecules which escape from the surface of the metal as bubbles of gas.

"Either of these actions permits more of the metal to go into solution and more hydrogen plates out, so that the corrosion continues at a speed which is governed by the rate at which the hydrogen film is destroyed.

"In the case of a calcium chloride refrigerating brine, it is evident from the foregoing statement that dissolved oxygen should be kept at a minimum. This may be accomplished by eliminating as much as possible the contact of the brine with air. Agitation and rapid circulation at such areas of contact should be avoided. Care should be taken that brine lines discharge under the surface of the liquid at all times, since any dropping or splashing of the brine in air tends to increase the amount of oxygen dissolved by the liquid. Naturally brines used in open systems such as ice tanks are likely to develop corrosive tendencies more easily than those of closed systems. Nevertheless, care in design and operation of all refrigerating brine systems, so as to minimize the amount and time of contact with air, will reduce the attendant oxygen absorption and will help an appreciable amount in reducing corrosion.

"Other factors which affect the absorption of oxygen in refrigerating brines are the density and temperature of the solution. Weaker brines dissolve more oxygen; therefore, brines always should be kept at full operating strength. While higher temperature brines in themselves dissolve slightly less oxygen than colder ones, the reaction between the oxygen and the hydrogen film is speeded up a great deal at warmer temperatures. Hence in off seasons of the year, or under other conditions when refrigerating capacity is to be reduced, it is desirable to keep the temperature of brine about 30°F. in any inactive units.

"The second major cause of corrosion taking place in refrigerating brines is due to atoms of hydrogen combining on the surface of the metal to form molecules of the gas which escapes as bubbles. Such action is largely a function of the acidity or alkalinity of the brine.

"In addition to acidity or alkalinity, there are two other minor factors which may contribute to removal of the hydrogen film as bubbles from the surface of metals in contact with brine, thereby promoting corrosion. There are galvanic action and stray currents."

When brine is weak, it is more likely to freeze on the surface of the coil. Even though there is no danger of bursting a coil when submerged in brine, the coating or film of ice gradually builds up offering a greater resistance to heat flow, thus reducing its effectiveness as a heat transfer medium.

An excellent article on this subject by K. M. Holaday is printed on page 65, 1947 Operating Data Book. Curves show the increase in the rate of corrosion as the density of the brine decreases although the effects are minimized in treated brine.—H.G.V.

New Questions

Condenser Equalizing Line

Question No. 832: If the liquid refrigerant drain from the condenser to receiver is installed in adequate size, is it necessary or beneficial to install an equalizing line from the condenser to the receiver?—M.S.S.

Revarnishing Motor Windings

Question No. 833: We realize that it is a good practice to clean out electric motors at least once each year and to do this more frequently where the accumulation of dust and dirt in the windings and parts in more rapid. In addition some plants make practice of revarnishing the windings or coils at regular intervals. Is this a good practice?—J.R.H.

Replacing Motor Brushes

Question No. 834: Two of our electric motors need new brushes. Will you please describe the best procedure to follow in renewing these brushes so that operation and wear will be on the best basis.—J.R.H.

Frozen Lemonade Concentrate

ANOTHER new frozen product is fresh lemonade concentrate. Test marketing of this new freezer product is now reported under way in selected cities and a favorable acceptance has been reported. The contents of a 5 oz can, with the addition of water, will make a quart of ready-to-drink lemonade.

The Ice Industry

National Association of Ice Industries

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The New Wage-Hour Law—How It Affects the Ice Industry

THE newly amended Wage-Hour law, titled "The Fair Labor Standards Amendment of 1949," becomes effective January 25, 1950. On that date the law will require that all employees covered by it be paid a minimum of 75 cents per hour for the first 40 hours of their employment, and time and one-half ($1.12½) per hour for all hours worked in excess of 40 during any work week.

Between now and next January 25, the Wage-Hour Division probably will release certain interpretative bulletins designed to explain what they believe to be the meaning and scope of the new Amendments, and more particularly as to how the Division will proceed with the administrative enforcement. In the administration of the Act there undoubtedly will arise many questions and problems to cause employers worry and concern.

In the meantime a brief synopsis of the new law, limited to those provisions believed to be of greatest importance to ice company management has been issued by the General Counsel of the National Association of Ice Industries. The following outline covers the more important of these provisions.

Major Provisions of New Law

The first thing an ice company must do is to determine whether or not its operations cause any or all of its employees to be covered by the law. As under the existing law, the work performed by an individual employee, not the business of the employer, determines whether the Act applies. This means that in a given establishment there may be employees covered, while others working alongside them may not be covered. Who is covered?

(1) Any employee directly engaged in interstate commerce.

(2) Any employee engaged in the production of goods for interstate commerce.

(3) Any employee engaged in any closely related process of occupation directly essential to the production of goods for interstate commerce.

The law will continue to be administered by the Wage-Hour Administrator—not the Secretary of Labor, as originally proposed. The powers and authority granted the Administrator are practically the same as at present, with one important exception. He is given the right to bring suit against an employer in behalf of the latter's employees to collect alleged unpaid wages; provided, certain specific conditions are met. These are:

(a) Each employee must waive his claim for double in writing to sue.

(b) The employee must waive his claim for double damages; i.e. only actual wages due can be made the subject of suit.

(c) The Administrator cannot bring a suit involving coverage to test new or novel questions of law.

(d) Suits by the Administrator must be prosecuted individually for each individual employee.

Both minimum wages and maximum hours are fixed by statute, 40 hours per week, 75 cents per hour for first 40 hours plus time and one half for overtime.

There are to be no Industry Committees authorized to establish higher or fluctuating minimums for different industries except for Puerto Rico and the Virgin Islands.

Under the existing law, the question as to what constitutes an employee's "regular" or "basic" hourly rate of pay has been extremely troublesome to employers and has constituted the basis for much litigation. The new law attempts to settle this issue by stating that:

"An employee's 'regular rate' shall be deemed to include all remuneration paid him for his employment, except it shall not include—

(1) Sums paid as gifts; such as gratuities at Christmas.

(2) Payments made for absences due to vacation time, holiday, sickness, traveling expenses, etc.

(3) Bonuses made at sole discretion of employer; or, payments made to a bona fide profit-sharing plan, trust or savings plan, (as may be delimited by the Administrator); or special talent fees including performers, radio artists, etc.

(4) Contributions.

(5) Premium pay.

(6) Payments made pursuant to a collective-bargaining agreement.

Next to Coverage, in importance to Ice Companies, is Section 13 (a) of the new law, which specifies who may be exempt. As already indicated, it is extremely important that ice companies carefully analyze their operations in order first to determine if, and to what extent, they are covered by the law, and secondly, having concluded that some or all of their employees are subject to coverage, they then look to see and to analyze their chances of having them exempted from the Act. The ice industry succeeded in having written into the Law a new exemption specifically identified as Section 13 (a)(4) which should free many ice companies from the Law altogether.

The exact language of Section 13 (a)(4) is a follows: "Section 13 (a). The provisions of Section 6 and 7 Section 6 refers to minimum wages - Section 7 refers to maximum hours - (This insert added) shall not apply with respect to . . . (4) Any employee employed by an establishment which qualifies as an exempt retail establishment under clause (2) of this subsection, and is recognized as a retail establishment in the particular industry, notwithstanding that such establishment makes or processes at the retail establishment the goods that it sells; provided, that more than 85 per centum of such establishment's annual dollar volume of sales of goods so made or processed is made within the state in which the establishment is located . . ."

The Conference report accompanying the bill and accepted by the Congress sets forth the following six conjunctive tests that must be met in order for the 13 (a)(4) exemption to apply:

"1—Over 50 per cent of its annual dollar volume of sales of goods must be made within the State in which the establishment is located.

2—Seventy-five percent of its annual dollar volume of sales of goods must not be for resale.

3—Seventy-five per cent of its annual dollar volume of sales of goods must be recognized as retail sales in its industry.

4—The establishment must be recognized as a retail establishment in its industry.

5—More than 85 per cent of the establishment's annual dollar volume of sales of goods which it makes or processes must be made within the State in which the establishment is located.

6—The goods which the exempt establishment makes or processes must be made or processed at the establishment which sells the goods. This test will be met despite the fact that there is a physical dividing line between the manufacturing portion of an establishment and the selling portion such as a partition, wall, etc."

The first three of the foregoing tests are exactly the same as those required by Section 13 (a)(2) for recognized "retail" or "service" establishments.

Translating into practical terms the tests of the 13 (a)(4) exemption to Ice Companies, the following observations represent what an ice company may do and still be exempt from the law:

1—They may make up to 49 (plus) per cent of their total annual dollar volume of sales of all their goods outside of the State in which the individual ice plant establishment is located.

2—They may sell up to, but not in excess of, 25 per cent of their total annual dollar volume of sales of ice for resale. This requirement strikes hardest at those companies having a number of peddlers or so-called independent dealers.

3—Seventy-five per cent of the total annual dollar volume of sales of ice they make must be recognized as retail sales within the ice industry.

4—The ice plant itself, as a separate establishment, must be recognized by the ice industry as being a retail establishment.

5—Since "more" than 85 per cent of the establishment's annual dollar volume of sales of goods which it makes or processes must be made within the State in which the establishment is located, an ice company may not make more than 14 (plus) per cent of its total annual dollar volume of sales of ice which it (the individual plant) makes or processes outside the state in which the plant is located.

6—The ice which an ice plant (otherwise exempt as a retail establishment) makes or processes must be made or processed at the establishment which actually does the selling. This requirement raises the important question as to how the Administrator and the courts will interpret the meaning of the term "at the establishment"; particularly as to sales made by driver salesmen from company-owned trucks and by those made from company-owned coin-operated stations located, for example, in different sections of a city away from the plant.

Natural Ice Storage House Burned

A NATURAL ice storage house, operated by a division of the Denver Ice & Cold Storage Co., at Alamosa, Colo., was destroyed by fire recently. The original cost of the structure, which was erected some years ago was about $300,000. The ice in the storage supplied a large vegetable producing section in that area. The owners are reported rushing construction of a new storage house, to be ready for the natural ice harvest this winter.

Business Publicity on Ice

A RECENT issue of Business Week, which has a wide circulation among business executives, told the story, with pictures, of how produce growers are cutting losses with the use of ice. It presents the ice industry as a progressive and prominent part of the nation's business.

Research Committee Issues Plans For Portable Ice Station

DRAWINGS and specifications for a portable retail ice station have been prepared by the Research and Engineering Department of the National Association of Ice Industries. These plans were prepared through the cooperative effort of the Research Department of the National Ice Association and the Research Laboratories of the Armstrong Cork Co., Lancaster, Pa.

Members of the Research Committee pooled their ideas for the design of an attractive, serviceable station which could be built by an ice company, according to a Bulletin of the Research Department. These ideas were combined with the best thinking of the Armstrong people. The result is that the plans have a dual purpose. They are suitable for a manually operated unit, or for building a facility for housing vending equipment. The station is modernistic in appearance, simple in design and easy to build. Its size may be altered to meet existing needs by the addition of standard bays. All specifications have been kept as general as possible because of local variations in the availability or economy of particular materials.

Because of variation in delivered prices of materials in different parts of the country and the flexible nature of the specifications, it has been difficult to furnish more than an approximate cost estimate. However, as a guide for thinking and estimating the cost of the necessary lumber and plywood cut to size, together with cork insulation, erection asphalt and sundries, and one cork insulated freezer door, amount to an estimated $790.00 based on delivered price of materials in Lancaster, Pa. Such material for each additional four ft. bay would be an estimated $145.00 according to these figures.

Complete specifications and construction details are available from the National Association of Ice Industries.

Sales Training for Ice Industry

A NEW sales training course is being planned for 1950 for the ice industry by the Personnel Training and Marketing Department of the National Association of Ice Industries. This training program will consist of fully illustrated text material for 16 sales meetings and a series of full-color sound-slide films.

The first part of the course will be used for fundamentals—explaining how ice produces refrigeration, how it functions in various types of refrigerators and other containers, why it is superior to other types of refrigeration; and teaching how to tell these advantages.

The second part will be an introduction to selling, how to find prospects, and how to contact the prospect in a way that will make selling time productive. It will explain why people buy and how to use this information.

Retired Ice Manufacturer Celebrates

FRANK O. RETTIG of Chattanooga, Tenn., celebrated his 90th birthday at his home, November 5. He was visited by a delegation from the Chattanooga Half-Century Club and presented with a hamper of fruit. Mr. Rettig is one of Chattanooga's pioneer ice manufacturers. He formerly owned and operated the Big Springs Ice Co., and later formed a partnership with L. C. Riggs, this partnership consolidating the Chattanooga Ice & Bottling Co., the Lookout Ice Co. and the Big Spring Ice Co. The consolidated firm was known as the Chattanooga Ice & Coal Co. About 1910 this company was merged with the Atlantic Ice & Coal Co. Although retired for several years, Mr. Rettig is mentally alert and cheerful.

National Ice Marketing Institute Graduates Two Classes

THE National Ice Marketing Institute graduated the first class in its 1949-1950 series at a final dinner at the Hotel Sheraton on October 14. The new crop of Institute graduates numbers thirteen men, ranging in age from twenty-three to fifty-nine and hailing from such widely separated places as Phoenix and Miami, Chicago and Corpus Christi.

In presenting the certificates of graduation, Mount Taylor, executive secretary, National Association of Ice Industries, said, "We in the Ice Industry now have the greatest opportunities in our history. Our success will be limited only by our ability to apply all the knowledge we have available. The real value of the Institute Course will be measured by the extent to which we translate knowledge into action."

Graduation dinner of National Ice Marketing Institute held at Hotel Sheraton, Washington, October 14.

Seated—left to right: William H. Pattee (Class Treasurer), Home Office Commercial Representative, Central Power & Light Co., Corpus Christi, Texas. Karl V. Pflanz (Class Vice-President), General Manager, St. Clair Ice Co., Belleville, Ill. William E. Kegg (Class Secretary), Supervisor of Delivery Dept., City Products Corp., Columbus, Ohio. Mount Taylor, Executive Secretary, National Association of Ice Industries. D. Howard Green (Class President), Vice-President, Crystal Ice & Cold Storage Co., Phoenix, Ariz. Thomas W. Douglas, National Ice Marketing Institute Superintendent. J. C. Ruppert, State Supervisor, Arkansas State Department of Education.

Standing—left to right: Roger W. Catts, Personnel Training Director, Polar Ice & Fuel Co., Indianapolis, Ind. Edward L. Mockler, Vegetable Ice Sales Manager, City Products Corp., Chicago, Ill. Clifford H. Friend, Bookkeeper & Salesman, Abso Pure Ice & Coal Co., Peru, Ind. Charles C. Baxter, District Supt., City Products Corp., Daytona Beach, Fla. H. E. Walker, New Business Representative, Central Power & Light Co., San Benito, Texas. Paul V. Brogan, Division Supt., City Products Corp., Cincinnati, Ohio. Edward J. McClure, Salesman and Utility Man, Terminal Refrigerating & Warehousing Corp., Washington, D. C. G. V. Smathers, Retail Sales Manager, Crystal Ice & Cold Storage Co., Phoenix, Ariz. Robert A. Ballowe, District Supt., City Products Corp., Miami, Fla.

At the dinner, Charles C. Baxter, district superintendent, City Products Corp., Daytona Beach, Florida, was introduced as toastmaster by Class President Howard Green. N.I.M.I. Superintendent Tom Douglas announced Roger Catts, Polar Ice and Fuel Co., Indianapolis, Ind., and Karl Pflanz, St. Clair Ice Co., Belleville, Ill., as recipients of top grades in the course.

Jake Ruppert of the Arkansas State Department of Education, formerly N.I.M.I. Superintendent, emphasized the trend to increased emphasis on training within industry, and complimented the Ice Industry on its advanced position.

Officers of the "Rebels and Yankees" Class were:

President, D. Howard Green, Vice-Pres., Crystal Ice & Cold Storage Co., Phoenix, Arizona.

Vice-President, Karl V. Pflanz, General Mgr., St. Clair Ice Co., Belleville, Illinois.

Secretary, William E. Kegg, Supervisor of Delivery Dept., City Products Corp., Columbus, Ohio.

Treasurer, William H. Pattee, Home Office Commercial Representative, Central Power & Light Co., Corpus Christi, Texas.

Others receiving certificates of graduation were:

Robert A. Ballowe, District Supt., City Products Corp., Miami, Fla.

Charles C. Baxter, District Supt., City Products, Corp., Daytona Beach, Fla.

Paul V. Brogan, Division Supt., City Products Corp., Cincinnati, Ohio.

Roger W. Catts, Personnel Training Director, Polar Ice & Fuel Co., Indianapolis, Indiana.

Clifford H. Friend, Bookkeeper and Salesman, Abso Pure Ice & Coal Co., Peru, Indiana.

Edward J. McClure, Salesman and Utility Man, Terminal Refrigerating & Warehousing Corp., Washington, D. C.

Edward J. Mockler, Vegetable Ice Sales Mgr., City Products Corp., Chicago, Illinois.

G. V. Smathers, Retail Sales Mgr., Crystal Ice & Cold Storage Co., Phoenix, Arizona.

H. E. Walker, New Business Representative, Central Power & Light Co., San Benito, Texas.

Second Class

The second class was graduated at a final dinner at the Hotel Sheraton on Friday, November 4. Mount Taylor, Executive Secretary, National Association of Ice Industries, awarded the certificates of graduation. The current crop of graduates swells the number of Institute Alumni to 136.

In awarding the certificates of graduation, Mr. Taylor commented on the number of young men in the group, emphasizing the bright prospects for the future, congratulated the managements of the companies represented on their progressiveness in utilizing the Institute's facilities, and complimented the graduates on their successful completion of the intensive course.

Class President William H. Adams, Manager, City Products Corp., Dayton, Ohio, presided at the dinner. Other class officers were: Franklin R. Human, Cataract Ice Co., Niagara Falls, N. Y.; Vice-president; and William C. Buck, Buck Ice & Coal Co., Columbus, Ga., Secretary-Treasurer.

Dan Prager, Director, Personnel Training and Marketing Department, stressed the necessity of putting into effect accepted modern principles of merchandising and personnel management, properly adapted to individual situations. Mr. Prager announced Bill Buck as having earned the highest grades in the course.

Class President Bill Adams called on Guy Jacobs, Director of the Public Relations Department; Frank Timmons, Director of Advertising and Publicity; and Tom Douglas, Superintendent of the Institute, all of NAII, for remarks; and, in the graduating class, on Stuart J. Hargie, Kalamazoo Ice & Fuel Co., Kalamazoo, Mich.; G. Elwood Hookey, Indiana Association of Ice Industries, Indianapolis, Ind.; Arthur E. McKenzie, Getchell Bros. Inc., Bangor, Me.; and Claude C. Ramsay, Jr., Electric Ice & Fuel Co., Inc., Spartanburg, S. C.

The Institute Course has been considerably expanded in the light of accumulated experiences and new developments in the Industry. Eight special lecturers, representing business, government, and education, now participate during each of the classes of two weeks' duration. Of the eight, two are from the NAII, two are from other trade associations, two are from the Federal Government, and two are from universities.

Five other classes are planned in the current series.

Canadian Ice Industry Displays Icing of Vegetables at Food Show

THE Canadian ice industry had a display of vegetable icing at the annual convention of the Retail Merchants Association of Canada "Food Division," held in Toronto, Canada, October 3-4. The display was under the direction of the Sized Ice Committee of the ice association headed by John Dade, general manager of the Belle-Ewart Ice & Fuel, Toronto.

Iced vegetable display at Toronto Food show, showing an uniced and iced vegetable case.

An outstanding event on the program was an address delivered by Dick Fischer of the Service Ice Co., Akron, Ohio, on vegetable icing. Mr. Fischer gave an outstanding address on this subject, basing his talk on experiences in his own city in Ohio. He proved conclusively that when vegetables are iced it is not an expense to the produce dealer but a saving, a saving for the reason that the vegetables will have a greater water content and there will be less trimming. He also showed that when the store sells iced vegetables, sales in other departments of the store were increased.

The ice display created a very favorable impression, receiving more attention than any other exhibit in the convention hall. It had two vegetable cases, one showing vegetables not iced and the other showing them iced. Vegetables were put in both cases on Saturday and remained until Tuesday evening. By Monday morning those in the case that was not iced had wilted and were very unattractive while those in the iced case looked just as good on display as they did when they were placed in the case Saturday morning. There were ten different kinds of vegetables including spinach, lettuce, radishes, cauliflower, carrots and corn.

The exhibit was manned by members of the Toronto Ice Dealers Association. At all times there was a crowd around it and many questions were asked. Many of the visitors wanted to know if they could buy sized ice from the ice dealer in their town and this question members of the committee could not answer in all cases which leads to the natural suggestion that there is no question that sized ice, particularly as it relates to vegetable icing, is a "must" and every live ice dealer should get geared up to this business. In every city there are many opportunities to develop sized ice business particularly as it relates to vegetable icing and every ice distributor should know the iced vegetable story, what size ice to use, what it will do for the food dealer, and then equip his plant with proper sizing equipment. For small plants, it is suggested that a start might be made with a small or medium sized ice crusher from which the ice can be broken into various sizes with a pick.

Beazley Retires as Head of Atlantic Co. Castleberry Assumes Post

THE retirement of Fred W. Beazley as chairman of the Board, has been announced by The Atlantic Company of Atlanta, Ga. This office will be discontinued. C. D. Castleberry, president, will assume active management of the company. Mr. Beazley retains his stock interest in the company, and his position as a director.

Mr. Castleberry has been with the company a number of years and has been president since the position of Chairman of the Board was established some years ago. He has served as division manager, vice-president and manager, and other positions. He has devoted his entire business career to the ice industry and related activities including cold storage, freezer storage, brewing and wholesale and retail fuel sales.

Mr. Beazley who has many interests outside of the Atlantic Company merged the Southeastern Ice Utilities Corp., operating in Virginia and the Carolinas with The Atlantic Company about twenty years ago and became president of the new firm. Since that time he has added to the company other ice and related properties. The company is one of the large concerns in the ice and fuel business and operates plants in about a dozen southern and southeastern cities.

American Ice Earnings

EARNINGS of American Ice Co., in the third quarter recorded a sharp seasonal increase over the three months ended June 30. They did not quite equal those for the third quarter last year, however. For the first nine months this year the net income exceeded by approximately 7 per cent the $530,276 reported for the corresponding period of 1948.

It is estimated that after preferred dividend requirements, the earnings available for the common stock will be around $1.15 a share, against 81 cents in the first nine months of last year. The sharp rise in net-per-share is due to the reduction which the company has made this year in its outstanding common stock. At the end of September there were 416,235 shares of the common in the hands of the public compared with 559,197 shares a year ago.

Boonville Ice Plant Sold

THE Boonville Ice & Storage Co., Boonville, Ind., was sold on October 18 at public auction to John P. Lutz, local attorney, who represented a group of unidentified Boonville business men. The plant, real estate, and equipment had been assessed at $52,701. The purchase price was $28,000. Since the selling price was not two thirds of the assessed valuation, the sale will be subject to approval of Special Judge John A. Posey.

The company, owned by Clark Huthsteiner, had been placed in the hands of receivers and had been operated for the past several months by E. A. VonArb. Plans for operation of the plant will be announced at a later date, Mr. Lutz said.

Morgan Guilty of Conspiracy

ON charges of conspiring to restrain interstate trade in the manufacture, sale and distribution of ice, Samuel R. Morgan and three ice firms with which he is connected in Shreveport, La., were found guilty in federal district court. The jury returned a verdict of guilty on only one of the four counts of a federal grand jury indictment returned at Monroe in the fall of 1948. Morgan was released on $5,000 bail, on which he has been at liberty since the grand jury indictment was returned. Bond of $500 each was posted for the ice firms.

Court officials said that Judge Ben C. Dawkins may sentence Morgan and the three firms late this month. The firms are the Louisiana Ice company, the Morgan-Vivian Ice company, and the Consumer's Ice company. The maximum sentence on the one count on which the jury returned the verdict of guilty is $5,000 fine and a one year prison term. During the seven-day trial approximately 75 witnesses including Morgan, testified for both sides.

The count on which Morgan and the other defendants were found guilty charges unlawful restraint of trade in violation of the Sherman anti-trust act in the production, sale and distribution of ice in Louisiana, Texas and Arkansas. Judge Dawkins charged the jury to disregard the reference to Arkansas in the indictment, since the government had failed to connect Morgan with ice transactions in Arkansas.

The defendants were also charged with having combined since 1941 to injure, destroy and acquire competing manufacturers of ice by selling ice at destructively low prices, and by giving ice away until competition was destroyed.

Witnesses testified that Morgan shipped ice to towns in Texas. Morgan later testified that the ice shipments were merely to aid other ice manufacturers who were in distress and needed ice to cover a temporary shortage. He said that he always tried to help competitors when they needed "distress" ice.

One government witness testified that he was told by Morgan during a one and one-half week period in 1947 to take ice to Benton and Waskom and throw it on the ground. The witness said he was employed by Morgan at the Louisiana Ice Company plant as a dock man at the time of the incident.

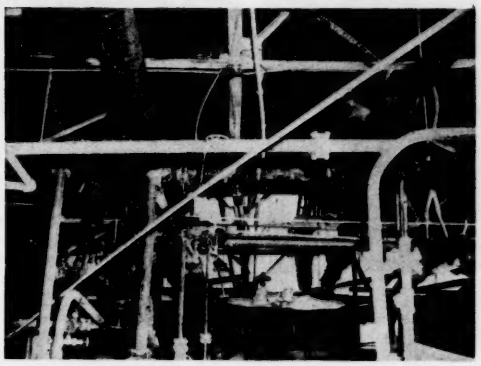
Freezing in Ice Blocks Demonstrates New Frozen Heat Knife

FULL page advertisements in the New York Times on September 13 launched the advertising campaign on a new knife that will not need to be sharpened for three years; with a three-year guarantee backing up this statement. The interest of the ice industry in this campaign is that a block of ice containing a number of new knives will be used to demonstrate the secret honing process for sharpening them which involves exposure to extreme heat and a colder temperature than ever before used. The name for the knife is a natural, the "Frozen Heat" knife. The idea of using an ice block was originated by The Public Relations Department of the National Association of Ice Industries and the story is told in a recent issue of "Ice Public Relations Today", issued by that department.

In New York City, R. H. Macy and B. Altman department stores were selected to handle this product. In Newark, N. J., L. Bamberger & Co., opened a huge housewares Fair in which an ice block containing Frozen Heat knives were displayed. A contest was held to determine how long it would take the ice to melt and a $50 radio was awarded the winner. Engineers from the American Ice Co., assisted in freezing the knives in the ice block.

Explosion and Fire Damage Utah Plant

FIRE touched off by two explosions damaged the Hygeia Ice Company plant, Salt Lake City, Utah, early October 13 with loss estimated at about ten thousand dollars. Remembering the disastrous fire in June which wrecked a large storage building of the Utah Ice & Cold Storage Company, the fire department of Salt Lake City responded to the alarm with all equipment available.



This view shows how upper portion of the Hygeia Ice Co. plant was blown out and burned.

The fire started with two explosions caused, it was believed, when an overheated ammonia line and an air compressor exploded. The first blast occurred at 2:35 a. m. and the second was a few minutes later. The ammonia line in the engine room apparently exploded first and the second blast came when the air compressor blew out.

This view of the upper part of engine room in Hygeia Ice Co. plant shows the charred roof deck and some of the damage of the pipes and connections.

The blasts were powerful enough to split the building at a point where the roof of the plant joined the wall. A large section of the engine room wall was also blown out. There was only slight damage to some 4500 storage lockers in the plant.

American Ice Wins Suit

THE Supreme Court of New Jersey has denied the petition of certain preferred stockholders of American Ice Co. for permission to appeal from a judgment previously entered in the company's favor. The lower court determined that there were no dividend "arrears" due on the outstanding preferred stock. Denial of this petition terminates litigation that has been pending several years.

Dayton W. Smith Named Vice-president City Products Corp.

AT THE last board meeting of the City Products Corp., Dayton W. Smith was made Assistant Vice President, according to an announcement by William J. Sinek, President. Mr. Smith came with the City Products organization about two years ago at the time of their acquiring the ice business of the Consumers Company of Chicago where he had served as vice-president and manager of the ice department for a number of years.

Dayton W. Smith

In his new assignment, Mr. Smith's activities with the company will take on a wider and more general scope. While he will continue to direct the company's retail ice business in the Chicago area, with which he has been very closely associated for a number of years, he will, in addition, assist in the direction of some of the general activities of the company.

Winners of Sales Contest Awarded Trip to New York City

BRIGHT and early Saturday morning, November 12, two automobile loads of happy refrigerator sales contest winners and their wives left central Indiana for New York City.

The drive to New York City took the group across the State of Ohio, the Panhandle of West Virginia, the full length of the famous Pennsylvania Turnpike, northern New Jersey and the Holland or Lincoln Tunnel under the Hudson into the heart of the world's largest city. A succession of interesting sightseeing trips were taken in New York including a boat ride around Manhattan Island, a trip to the Statue of Liberty, a conducted tour of Rockefeller Center and Radio City, an elevator ride to the top of the Empire State Building, a subway and elevated trip to famous Coney Island plus numerous other equally as interesting trips.

Tickets were reserved for the group for a well known Broadway play, the Ice Show and for one of the big chain broadcasts. A night tour of Chinatown with dinner at a Chinese Restaurant was also planned. Reservations were made for the party in one of the large mid-town hotels adjacent to Times Square. Returning, the group left New York City Friday afternoon, November 18 and went home via Washington, D. C., where a day was spent visiting the capital, the White House, Washington Monument, the Lincoln Memorial and other famous buildings and shrines.

This trip was the culmination of a Refrigerator Sales Contest conducted by The Big Ten Ice Companies, operating ice plants in South Bend, Lafayette, New Castle, Elkhart, Goshen, Plymouth and Rochester, Ind.; Hamilton, Middletown and Troy, Ohio; and Louisville and Richmond, Ky. The three top winners and their wives were awarded the all-expense trip to New York. They were: Rollie Stanley, Consumers Ice & Coal Co., New Castle, Ind.; Raymond Fisher, Lafayette Ice & Coal Co., Lafayette, Ind., and Robert Harwell, Lafayette Ice & Coal Co., Lafayette, Ind. A number of other employees participated in the contest and had a part in selling 1095 new units of ice-using equipment.

Ice Appliance Salesman Wins Prize Trip to California

"WILLIAM Applegate III and wife of Beardstown, Ill., recently entrained on the El Capitan, crack train of the Santa Fe, for an extended vacation in California." Similar notices frequently appear in home town papers all over the country but the above has special significance to the men of the ice industry responsible for sales and those out on the firing line. Here is the story as related by John Glenn, president, Glenn Ice & Fuel Co., Beardstown, Ill.

"Our recent sales contest entitled "California or Bust", was held from April 1 to September 10, 1949. Mr. Applegate, our ice appliance salesman won the first prize trip to California. To win this trip Bill sold 84 domestic refrigerators, five meat cases, 32 Progress 6 ft. chests, three Ward commercial refrigerators, replaced three mechanical refrigerators with air-conditioned ice refrigerators and converted one mechanical vegetable display case to ice. We are very proud of his record in this rural community. Incidentally, Bill started with us while in High School as an ice puller, later worked as a car washer at one of our service stations, spent two years in the Navy and recently was elected as alderman in the first ward.

This contest, labeled "California or Bust," lasted from April 1 to September 10. The territory served by the company was divided into sections to be covered by a particular salesman. Each city or town in the area was set up on a quota basis. For example, a town with a population of 6,000 was divided by four to obtain the number of families. From this figure the goal was to sell one out of every twenty-five. This base figure provided a quota of sixty ice refrigerators for a town of 6,000.

Ice Going Strong Says Magazine

THE iceman still cometh, and carries twice as much ice as he did 20 years ago, says Electrical Merchandising, McGraw-Hill publication. Despite the rapid strides made in the mechanical refrigeration field, the ice refrigerator is still very much a part of the modern scene.

The magazine says that according to the National Association of Ice Industries, there is one ice refrigerator for every two mechanical refrigerators, and consumption has been increased from 25 million tons in 1925 to some 50-million tons last year. One of the reasons for the increase is that more people are using ice in more different forms today than previously. And many owners of mechanical refrigerators remain good customers of ice companies for cubes and sized ice for parties and entertaining. Also, more foods are served on or with ice in restaurants.

"Appliance retailers would apparently do well not to underestimate the vigor of an old competitor," says the article.

Tennessee Ice Companies Merge

ANNOUNCEMENT has been made of the consolidation of the Citizens Ice & Coal Co. and the Home Ice & Coal Co. of Union City, Tenn. into a new corporation to operate under the name of the Hi-Test Products Co., with J. Morgan Sedberry as manager and John M. Owens as assistant manager. The new company will operate the Home Ice Co. plant on East Main St. The Citizens Co. plant, Second and West Main Sts. will be remodeling for handling of coal, fuel oil and installation of machinery for grinding feed, and the present ice making machinery removal.

Reports From Unit Ice Associations

Unit Ice Association Secretaries Annual Fall Meeting

THE annual fall meeting of the Unit Ice Association Secretaries was held the opening day of the annual convention of the National Association of Ice Industries. Meeting Tuesday morning, November 15, the group heard an outline of a new merchandising plan, brief reports from the secretaries regarding conditions in their sections and an address by Henry P. Fowler of the United States Chamber of Commerce.

R. W. Davis of The Union Ice Co., San Francisco, Calif. advanced the idea of inaugurating a nation-wide contest on the sales of ice-using appliances, to be participated in by all member companies of the National Association. Classifications would be set up to differentiate between companies in large and small cities, employees would be rated on the basis of their opportunities of selling, and a group of prizes would be offered for the best sales records, both sectionally and nationally.

Mr. Davis did not offer this as a finished project but rather as a suggestion, the details to be worked out later by the National Association or by a group representing the Association. He said that similar projects had been very successful for individual ice companies and he thought it might be equally successful if staged on a national basis.

Reports from Secretaries

Reports from the unit secretaries indicated considerable progress along the line of merchandising and general association work. Robert Walton of Indiana described briefly the research on pre-icing of sweet corn with the assistance of Purdue University and resulting increased sales of ice. Mr. Walton also mentioned a short course specially designed for ice company personnel to be given in a number of cities by the Department of Distributive Education of Indiana University, aided by federal funds. A similar short course is being planned by Texas A & M College and others.

Other secretaries reported briefly on association work in connection with vegetable icing, legislative work, training schools and courses for employees, organization of merchandising councils. K. C. McCrea reporting from Canada said Canadian ice men still rely largely on domestic ice sales and an active merchandising program is maintained to continue selling of domestic refrigerators. Canadian ice sales, he said, will show an increase of about 15 per cent over last year.

Association Service

In a prepared address, Henry P. Fowler, manager of the Trade Association Department of the United States Chamber of Commerce, spoke on the duties of an association and the services it should render its members. Association dues, he said, are not usually large but they do represent an element of business expense and a member has a right to inquire as to what results he can expect from his membership.

The first duty is operation of the association on a sound business basis, under a budgeting plan, setting aside for a rainy day about 100 per cent of annual expenses. Other characteristics of a well managed association is keeping by-laws up-to-date, and constant reorganization of committees so the results of their work will be effective for the good of the entire industry.

A valuable service to all members is providing marketing information, showing changing conditions in business and industry and information on new legislation and government regulations that affect that branch of industry. Changing conditions will require new services and the association management must keep abreast of these conditions.

The association also represents the industry to the public and to consumers and a program of public relations should be a part of its work. Concluding he expressed the conviction that trade associations represent a strong force in the continuance of American free enterprise. In fact it is one of the last bulwarks against those forces that would disrupt the free enterprise system.

A tribute to the memories of Ollie P. Fauchier of Indiana and Leon A. Bailey of California whose deaths occurred during the past year was expressed by Gen. P. A. Weatherred. Both of these men, he said, had made outstanding contributions to the ice industry and they will be missed.

Thomas Douglas of the National Ice Marketing Institute, C. P. Austin, director of the Engineering and Research Department and Dan Prager, director of the Personnel Training and Marketing Department gave brief reports on some of their more recent work.

Officers for the coming year were re-elected. V. A. Esphorst, secretary of the Missouri Ice Manufacturers Association will continue as president and Wm. D. Wright, secretary of the Illinois Association of Ice Industries as secretary-treasurer.

Illinois Ice Merchandising Council

AFTER a succession of two presidents and one vice-president retiring from active work in the ice industry, the Illinois Ice Merchandising Council was reactivated October 9 at the Leland Hotel, Springfield, Ill. with the able assistance of their secretary, W. D. Wright.

Charles B. Anderson, Artesian Ice Co., Fort Madison, Iowa, was elected president. William Applegate, Glenn Ice & Fuel Co., Beardstown, Ill., was elected vice president, and Francis Reed, Western Illinois Ice Co., Galesburg, Ill., was re-elected secretary-treasurer.

After the new officers were installed the council took up the question of joining in the National Ice Merchandising Forum which was accepted wholeheartedly by the group.

The question of setting future meeting dates and convention activity were taken up at the morning session. The afternoon session was taken up by an open forum blackboard chalk talk on new and old proven and tested methods of selling ice appliances in winter months. Eleven companies were represented by twenty-four in attendance.

The council is now actively engaged in preparing a half day's program for the Illinois Ice Association's 43rd annual convention to be held in Peoria, December 14-15-16. Daniel Prager from the National Ice Association will be one of the highlights on the program.

Illinois Association of Ice Industries

By WM. D. WRIGHT, Secretary

OFFICERS of the Illinois Association of Ice Industries are concentrating on the details of the annual convention to be held December 14-16 at the Jefferson Hotel, Peoria. The program is rapidly taking form and a good attendance is expected.

Ice sales in Illinois were way down in September as compared to September 1948, as much as 30 to 40 per cent in some instances. Think when the books are closed 1949 will go into the records as a "toughie."

Florida Ice Association, Annual Convention

THE 24th annual convention of the Florida Ice Association was held at the Soreno Hotel, St. Petersburg. Fla., October 12-14, 1949. A very complete educational program was presented through speakers drawn from members of the Florida Association, representatives of the National Ice Association and representatives of other business interests in Florida.

The convention was opened Thursday morning by President Herbert Beers of St. Petersburg. Report of the secretary was presented by Miss Muriel Washburn, executive secretary of the association. Miss Washburn expressed her pleasure in working with and for members of the association and outlined briefly the chief activities of the association during the past year. Cited as an outstanding accomplishment were the two short courses co-sponsored by the general extension division of the University of Florida and the Florida Ice Association. She said these courses had met with such splendid success and the demand for more educational information along that line was so great that the association planned to put on several such courses during 1950.

Newly elected officers and executive committee members of the Florida Ice Association.

Back row—J. D. Clark, Bartow; Joe S. Earman, Vero Beach; Glen Greene, Miami; R. F. Tibbs, Orlando; Geo. Stovall, St. Petersburg; Front row—E. F. Melton, vice-president, Mulberry; Muriel Washburn, exec. secretary, Jacksonville; F. M. Pumphrey, newly elected president, Daytona Beach; H. R. Kahler, treasurer, Miami. New executive committee members not present were F. H. Cramer, Miami and Frank Vacanti, Tampa.

The importance of organized endeavor, she said, had been evidenced on the National as well as the State level during this past year as shown by the fight made by ice manufacturers as well as other affected groups in Congress and the Florida legislature on legislation affecting the ice industry, as a result of which the Wage-Hour law was modified and adjustments made, and ice was exempted in Florida's new sales tax.

Recalling artificial ice was first manufactured in Apalachicola, Fla., one hundred years ago by Dr. John Gorrie, Miss Washburn said she felt sure Florida's ice manufacturers would respond to National Association's request for their support in advertising a century of progress in our industry.

President's Report

In his report to the convention, President Beers gave a full and detailed account of his activities. He expressed his pleasure in having the privilege of working with the various committees and extended his thanks for their cooperation and help in all of his undertakings. He also thanked the guests and members for their attendance at this convention and concluded his address with thanks to the members for the privilege and honor of serving them during the past year.

New Officers and Directors
Florida Ice Association

President, Frank Pumphrey, Daytona Beach.
Vice-president, E. E. Melton, Mulberry.
Treasurer, H. R. Kahler, Miami.
Secretary, Miss Muriel Washburn, Jacksonville.
Executive Committee: R. F. Tibbs, Orlando; Glen Green, Miami; J. D. Clark, Bartow; J. S. Earman, Vero Beach; Herbert R. Beers, St. Petersburg; Frank Vacanti, Tampa; F. H. Cramer, Miami.

National Legislation

Under the subject "A New Look at an Old Subject," William T. Jobe, general counsel of the National Association of Ice Industries gave a very impressive talk on the Wage-Hour Act, explaining that this legislation first started during depression days and has grown and spread since that time as has also spread confusion in the minds of the employer and employee. Under the new legislation, he said, the ice industry may be exempted from its provisions. The new amendment provides that ice plants which can qualify as retail establishments shall be exempt.

One of the features of the convention was an address by J. Frank Rushton of Jacksonville who, in his usual dynamic style, brought an important message to the members of the convention. He pointed out that the people of America are not having hard times but that, on the contrary, they are now in a normal business cycle. When the American factories produce more than the public can consume, then conditions are normal. He said it is time that the manufacturers of this country realize that there is going to be stiff competition for the consumers' dollar and that these conditions will continue along this trend as long as more is produced than can be consumed.

National Ice Advertising

E. L. Gunn, Jr., chairman of the operating committee, National Ice Public Relations, gave an interesting and constructive talk on National ice advertising for 1950. He presented a resume of the 1949 ice advertising program and expressed the hope that the industry would surpass last year's fund raising in the coming year, which is the 100th anniversary of the ice industry, which would make possible increased magazine advertising as well as the other activities carried on last year.

John Kaup, refrigerating engineer of the Refrigeration Engineering Co., Minneapolis, Minn., speaking on ice vending stations, emphasizing that this new method of merchandising is proving very successful since it makes ice constantly available to the consumer. He described a coin vending machine, explaining that a 20 lb. vendor will hold 66 bags of ice each weighing 12½ lbs. and 40-150 lb. pieces. The use of this machine he said is rapidly increasing in Minneapolis where there are a total of 40 machines in operation compared to only three a year ago.

(Continued on page 65)

Southwestern Ice Manufacturers Association Fall Conference of Engineers

THE 1949 engineers' conference of the Southwestern Ice Manufacturers Association was held at the Baker Hotel in Dallas, October 18 and 19. The attendance was well in excess of one hundred engineers, vitally interested in the practical problems of operation.

New Developments in Water Treatment for Ice Manufacturing was discussed by Lawrence K. Cecil, International Filter Co., Tulsa, Okla. This was in the nature of a report upon experiments conducted in the treatment of water that will eliminate cores and the necessity, therefore, for the pulling of cores. The practical problems involved were frankly stated but the listeners were convinced that Infilco is working on a process about which a great deal more will be heard in years to come.

W. S. Cooley, vice president and general manager El Paso Ice and Refrigerator Co., El Paso, Tex., reported on the construction and operation of his company's new plant in El Paso. This came in for much discussion. The automatic controls, the revolutionary planning and the results being obtained in this plant are attracting the interest of all engineers who are alert to developments in their profession.

In his paper on Design for Application of Refrigeration to Manufacturing and Processing Plants Allied to the Ice Industry, R. R. Matthews, Matthews Engineering Co., Dallas, Tex., gave a comprehensive design for a plant that would combine ice manufacture, milk processing, cold storage, cold storage locker, and meat processing features. This talk was made in response to the situation developing in the industry through which these various refrigerating processes are combined with that of ice manufacture. Roy Matthews is known as one of the leading engineers in Texas and his discussion was informative and gave a sound and experienced engineer's approach to the problem of diversification of refrigeration processes with ice manufacture.

Ralph F. Thompson, Chemical Engineering Co. of Dallas gave a talk on Fouling and Cleaning of Condensers which was one of extremely practical nature. His presentation was comprehensive and was a happy combination of the scientific and the practical.

One of the interesting discussions developed was that under the topic of Air Conditioning with Ice. The discussion was led by Alan S. Dodds, engineer of air conditioning work for the Southland Corp. Mr. Dodds gave sound advice along the "rule of thumb" rules by which the manager of an ice plant, or his engineer, can approach the problem of air conditioning of churches and other auditoriums subject to intermittent uses. This talk was followed by Ralph H. Irvine, Home Ice Co., Palestine, Tex., and Roy R. Matthews, Matthews Engineering Co., Dallas, Tex. Both Irvine and Matthews engaged in technical discussions that were laid out in a fashion that the practical engineer could readily understand them.

Obert K. Irvine, Southland Corp., Dallas, gave a pictorial travelogue of Union Ice Co. operations in California. With the air of numerous pictures, he explained the various ingenious and progressive steps that have been taken by the Union Ice Company in the development of economy and efficiency in their ice manufacturing processes.

The conference was closed by a most interesting report given by Dean W. R. Woolrich of the University of Texas of his year's experience in refrigeration fields of England and Continental Europe. The Dean brought out the essential differences in the food habits of the American and European peoples, and his report was of great interest to his engineering audience.

Chairman Irvine's report upon the plans for the Engineers' Short Course to be held at A. & M. College during the week beginning January 22 was received with a great deal of interest. He reported that all of the members of the instructional staff for the course last year will serve again in their respective capacities. As a result of the experiences of the 1949 course some changes have been made in the handling of some of the subjects. However, the subjects to be covered will be the same as were those of the 1949 course.

A pleasing diversion for the conference was the attendance at the State Fair during the evening of October 18. Admission tickets to the fair were supplied to all of those attending and their wives by the Dallas ice industry.

North Carolina Ice Merchandising Forum Organized

AT A recent meeting of the Board of the North Carolina Ice Manufacturers Association, with Daniel A. Prager, director of NAII's Personnel Training and Marketing Department, a North Carolina Ice Merchandising Forum was organized. The association's Merchandising Committee was enlarged to accommodate the forum organizational plan, and the state will be divided into several zones for the conduct of merchandising meetings and conduct of the forum's work.

Merchandising forums have been activated since last January in accordance with the Personnel Training and Marketing Department's organizational plan in the following states: Texas, Oklahoma, Kansas, Missouri, Ohio, Illinois, Indiana, Arkansas, North Carolina, Louisiana, Mississippi, Maine, New Hampshire, Vermont, Rhode Island, Massachusetts, and Connecticut. Forums will be set-up in Florida and several other states in the near future.

In each instance, a state merchandising forum chairman has been elected and he is aided by a number of committees to help put the program into operation. To date over thirty individual forum sessions have been conducted in which icemen discussed ice merchandising problems and exchanged selling ideas and plans.

Tying all the state forums into an industry-wide merchandising movement is the National Ice Merchandising Forum. This organization is comprised of all chairmen of the state forums. They will meet periodically with the Personnel Training and Marketing Committee for counsel in establishing policies and plans that will enable the Department to better serve the whole membership within its entire scope of operation.

California Association of Ice Industries

THE thirtieth annual convention of the California Association of Ice Industries will be held at the Fairmont Hotel, San Francisco, December 12-13. The principal theme of the program will be to stress new marketing opportunities and new techniques in winning public acceptance for ice refrigeration. Each subject will have a bread-and-butter meaning with few, if any, outside speakers. The entire program is planned to provide usable information to staff members quite as much as to executives and officers.

Some 5,000 sq. ft. of exhibit space has been reserved adjoining the convention room where displays of ice-making and ice-using equipment will be shown. New refrigerator models will be included in the display.

Refrigerated Warehousing Industry

NEWS • ARTICLES • ANNOUNCEMENTS

NATIONAL ASSOCIATION of REFRIGERATED WAREHOUSES

Division of American Warehousemen's Association

Executive Offices:
Tower Building, Washington 5, D. C.

Secretary, W. M. O'Keefe
Executive Vice-pres., Wm. Dalton

President, Arthur N. Otis
New York, N. Y

Vice-president, Fred F. Alford
Dallas, Tex.

Treasurer, J. L. Gagini
Omaha, Nebr.

Annual AWA Convention to Cover Industry Problems—Tentative Schedule of Events

PRELIMINARY announcement of the program of the annual convention of the American Warehousemen's Association and the National Association of Refrigerated Warehouses to be held January 30 to February 2 at the Edgewater Beach Hotel, Chicago, indicates that emphasis will be placed on down-to-earth bedrock discussions on current and vital industry problems. The following tentative convention schedule has been planned:

SUNDAY—JANUARY 29

Registration, all day
AWA Divisional Executive Committee Meetings
AWA General Board Meeting (dinner)

MONDAY—JANUARY 30

NARW First-Timers' Breakfast
Divisional Sessions (NARW and Merchandise Divisions)
Luncheon — Opening AWA General Session, Everett Dirksen, Speaker
Divisional Sessions
6:30 p.m. Get Acquainted Cocktail Party (AWA)

TUESDAY—JANUARY 31

NARW Committee Meetings, Breakfast
Divisional Sessions, all day
AWA Family Party Dinner—Marine Dining Room

WEDNESDAY—FEBRUARY 1

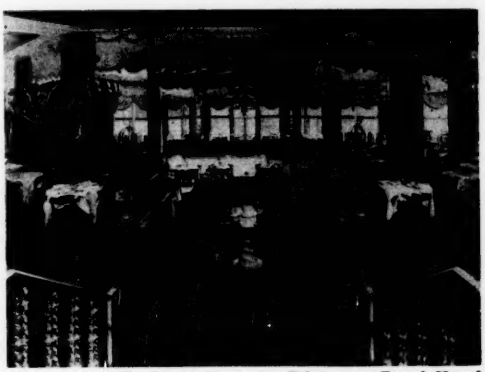
Divisional Sessions until 4 p.m.
Closing AWA General Session 4 to 5 p.m.
Pacer Luncheon (probable)
6:30 p.m. President's Reception
7:30 p.m. Annual AWA Banquet.

Although Thursday has not been scheduled, the Merchandise Division may have official or unofficial events on that day. The NARW moves to the Congress Hotel, Thursday, for the Frozen Food Convention.

While constructive suggestions for the NARW sessions have already been received and discussed by the members of the Executive Committee, those in charge of the program are interested in hearing from all members. They are invited to tell exactly what kind of a session they want and to make it possible to do this with a minimum of effort a questionnaire has been sent to all members. The program committee hopes to use returns from this questionnaire to plan a program that will provide every member with the kind of a program from which he will receive maximum benefit.

Advance Registration

Advance registrations for the annual meeting, according to late word from association headquarters, indicate record-breaking attendance. Although the Edgewater Beach Hotel held its entire allotment of single rooms for members of the convention, requests for these rooms exhausted the supply. However there are a number of twin-bed rooms and wherever possible, it is requested that these rooms be reserved so that as many as possible may be quartered at the headquarters hotel. Special rates are in effect on the double rooms.



Entrance to Marine dining room, Edgewater Beach Hotel.

For those who wish to bring friends to either the A.W.A. annual banquet or the Family Party, extra tickets will be available. The Family Party will be held Tuesday evening and the banquet Wednesday evening. At both of these events, there will be good food and entertainment only—no speakers or official business.

A report from association headquarters the middle of November stated that the convention program committee was in the midst of considering many suggestions and

ideas they had received from members for this program. A whole new field of subjects has been opened up by expressions of views, preferences, etc. from members. As a pre-view peek, the report stated, those who are at the convention can expect plenty of discussion, a minimum of speeches, and a pattern as down-to-earth and modern as next year's model automobile.

Executive Committee Meets

A meeting of the executive committee of the National Association of Refrigerated Warehouses was held in Chicago October 6-7. The proceedings covered industry matters and problems requiring policy-making attention. Among the items discussed were committee reports, Federal Trade Commission conference rules, NARW committee review, government purchase and farm price support programs, labor contracts, group insurance, banking committee brochure (soon to be released), and new commercial code. The committee also discussed the program of the annual convention to be held January 30-February 2.

New Members

The following membership applications have been approved by the NARW executive committee: Georgia Ice Co., Savannah, Ga.; Tennessee Cold Storage Co., Nashville, Tenn.; Marylynn Cold Storage & Warehouse Corp., Miami, Fla.; Continental Freezers, Inc., Lafayette, Ind.; Florida Quick Freeze & Cold Storage Co., Miami, Fla.; Scottsbluff Ice & Storage Co., Scottsbluff, Nebr.; The Carey Ice & Cold Storage Co., Hutchinson, Kans.; Liberty Ice & Cold Storage Co., Galveston, Tex.; Kern Ice & Cold Storage Co., Bakersfield, Calif.; Manufactured Ice Co., Bloomington, Ill.; Tule Lake Cold Storage Co., Tule Lake, Calif.; Independent Cold Storage Co., Lubbock, Tex.; and Southwest Ice & Dairy Products Co., Enid, Okla.

Group Insurance Committee Meets

THE group insurance committee of the National Association of Refrigerated Warehouses, especially appointed by President Otis to draw up a group insurance plan, held an all-day meeting recently with insurance company representatives at the Washington office of the Association. Decisions were reached on most major points but the committee arranged to hold a later meeting in Baltimore for final decisions and selection of an insurance company to underwrite a plan. The plan will provide life and accidental death and dismemberment insurance for all employees at group insurance rates. Members of the insurance committee are H. W. Wilson, Philadelphia, Jerry P. Johnson, Washington, and Gordon Janney, Baltimore.

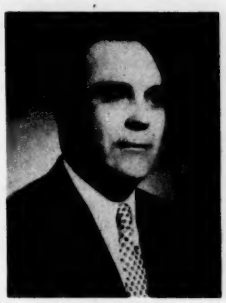
North Atlantic Chapter

A BUSINESS meeting of the North Atlantic Chapter of the National Association of Refrigeration Warehouses was held at Baltimore, November 9. Succeeding H. C. Emerson, Bridgeton, N. J., Jerry Johnson of Washington, D. C., was elected chapter chairman. Other officers are: Vice-chairman, C. B. Eddy, Providence, R. I.; Secretary, Carleton Peacock, Philadelphia; Treasurer, Ray Fuller, Springfield, Mass. New members of the executive committee are Wayne Wilson of Brooklyn and Raymond C. Cash of Rochester.

Speakers at the meeting included Henry Miller of the Trade Practice Conference, Federal Trade Commission and Lawrence S. Martin, secretary-manager of the National Association of Frozen Food Packers, both of Washington.

Pentzer Succeeds Fisher as Bureau Head Dept. of Agriculture

THE appointment of W. T. Pentzer to succeed D. F. Fisher whose death was announced in the November issue of ICE AND REFRIGERATION has been announced by the U. S. Department of Agriculture. He becomes head of the Transportation and Storage Section, Bureau of Plant Industry, Solid and Agricultural Engineering of the Department with headquarters at Beltsville, Md.



W. T. Pentzer

Mr. Pentzer began his service with the government in 1926 in Chicago doing research work on fruits and vegetables and then was transferred to the Bureau of Plant Industry, Soils and Agricultural Engineering six months later to work on potato storage in Aroostook County, Maine. For the next three years his headquarters were in Washington, D. C. working on various problems in connection with the handling, storage, and transportation of fruits and vegetables.

A native of Lincoln, Neb., he holds a bachelor's degree from Oregon State College and a master's degree from Iowa State.

In 1929 he went to Fresno, Calif. to start work on the handling and storage of grapes and he has spent the past twenty years in California in the field of handling, storage, and transportation of deciduous fruits and vegetables, working out better methods of storing grapes and other fruits and in precooling fruits and vegetables.

Mr. Pentzer is a member of the American Society of Refrigerating Engineers, the Scientific Advisory Council of the Refrigeration Research Foundation, the American Society for Horticultural Science and the American Society of Plant Physiologists.

Dr. Harold T. Cook will serve as assistant head of the section and will be in charge of plant disease aspects in the research.

Southwestern Chapter Fall Meeting

THE Southwestern Chapter of the National Association of Refrigerated Warehouses held a fall meeting at the Adolphus Hotel, Houston, Tex., October 16. A good representation was present from the four states comprising the Southwestern area, Arkansas, New Mexico, Oklahoma and Texas.

All officers were re-elected as follows: Chairman, John K. Dozier, Houston Terminal Warehouse and Cold Storage Co., Houston; Vice-Chairman, Custin P. Metcalf, Southwestern Ice & Cold Storage Co., Austin; Secretary, D. A. Laird, Texas Creamery Cold Storage, Houston.

New Refrigerated Storage Space

THE Field Service Division of the United States Army wants to know how much new public cold storage capacity has been placed in operation in the United States since January 1, 1947. Refrigerated Warehousemen who have expanded their facilities in the past three years are asked to advise NARW what the increase has been in terms of cubic or square feet.

Hog Support Levels Announced

MONTHLY hog price support levels for the period October 1949-March 1950 have been announced by the U. S. Department of Agriculture as follows: October, $16.40 per hundred pounds; November, $15.00; December, $14.20; January, $14.90; February, $15.50; March, $16.20. The support levels are based on 90 per cent of the September 15, 1949, parity price of hogs of $17.60. This figure is adjusted to reflect in each monthly support price the usual seasonal price variations.

The monthly support levels are the amount at which average hog prices must be maintained if farmers are to receive 90 per cent of the parity price for hogs. The support figures are comparable to the average price received by farmers, which on September 15 was $19.90 per hundred pounds.

In addition to monthly levels, weekly guides are also determined as an aid in carrying out actual support operations if needed. Weekly guides are a composite figure for seven mid-western markets and are comparable to the combined average market price of barrows and gilts at these localities. The weekly guides are not regarded as specific support levels at these markets. However, since they do reflect the normal weekly relationship between the average price at these seven markets and the national monthly average price, they make a desirable guide for any support operations that may be required.

This method of hog price supports was first announced for the September 1949 period. Previously support levels had been on a weekly basis for the Chicago market with fixed differentials for other markets.

Meat Production in September

MEAT production during the month of September, according to "Livestock Market News," issued by the U. S. Department of Agriculture showed a tendency toward a slight increase for cattle and hogs, but a continued decrease for sheep and lambs. The same tendency is shown in the nine months January to September inclusive, except that calves seem to be recovering from a slump. Details are shown in the accompanying table.

FEDERALLY INSPECTED SLAUGHTER AND MEAT PRODUCTION IN THE UNITED STATES (THOUSANDS OF HEAD)

	Sept. 1949	Sept. 1948	Sept.–5 Yr. Average–Pct.		Jan. 1949	Sept. 1948	9 Mos.–5 Yr. Average–Pct.	
							1949	1948
Cattle	1,224	1,178	104	109	9,884	9,469	104	101
Calves	552	599	92	89	4,786	5,087	94	96
Hogs	3,879	2,836	137	166	35,592	32,003	81	64
Sheep & Lambs	1,180	1,464	81	75	8,846	10,938	81	64

Montreal Storage Calls Preferred

MONTREAL Refrigerating & Storage, Limited, Montreal, Canada, has advised the Montreal Curb Market that all the company's outstanding 5 per cent cumulative first preferred shares of $30 par value have been called for redemption on November 15, 1949, at a price of $30 a share plus accrued dividend from January 1, 1949.

Dividends are payable annually and the last payment was $1.50 a share on December 16, 1948. At the close of 1948 the number of first preferred shares outstanding was 6,491. In August, 1947 the company redeemed an outstanding issue of second preferred shares. When the first preferred shares are paid off, the only capital stock outstanding will be 37,000 shares of no par value common stock.

Egg and Poultry Award

NOMINATIONS are now being solicited for the third annual Christie award. This award consisting of $500 and an appropriate scroll is sponsored by the Poultry and Egg National Board. It is for the purpose of recognizing meritorious service to the poultry industry and will be awarded to the nominee who in the opinion of the judges has, in the past decade, made the most significant contribution to the advancement of the industry through research, teaching and/or extension concerning the value of poultry products in the human diet. The judging will emphasize researches and dissemination of information concerning processing, quality conservation, the use of poultry products as food and the nutritive qualities of poultry and eggs that will add to the public knowledge of the place of these products in the diet.

Nominators should send nominations to H. J. Sloan, chairman of the Christie Award committee, University Farm, St. Paul 1, Minn., not later than December 12, 1949. The winner will be the honor guest of the Poultry and Egg National Board at its annual meeting in Chicago on January 14, 1950. The award is made possible through the generosity of Andrew Christie, prominent poultry breeder of Kingston, N. H., who has provided for the issuance of the award through 1957. Upon request the chairman will send additional information to those who wish to make nominations.

Vancouver Cold Storage Expands

PLANS for a 4 million dollar investment in cold storage outlets east of the Rockies for produce it now handles locally have been announced by the British Columbia Ice & Cold Storage Ltd., Vancouver, B. C., Canada. Officials expect the branch plants will be ready for the 1950 crop. This company operates a large cold storage plant on Vancouver's waterfront.

Richard J. Grosse, managing director said in the company announcement: "The selling season can be spread over a much greater period if we can supply storage facilities at Prairie centers. Growers should be freed from the gamble of the crated fresh fruit deal and assured a sustained selling period for their products at times convenient to the housewife."

The company now handles a large part of the Fraser Valley strawberry and raspberry crops. Mr. Grosse disclosed that the plan was suggested by R. C. Lucas, general manager of the Pacific Co-operative Union, whose Mission City plant ships much of the produce from that area. The chain is expected also to work in reverse, that is, for handling of Prairie meats and animal products for coast distribution.

New San Francisco Warehouse

PLANS and financial arrangements are under way for erection of a six-story, eight million dollar warehouse, cold storage and manufacturing building on an eight acre site between Fifth, Sixth, Chanel and Indiana, San Francisco, Calif. Negotations are in progress with a large insurance company to handle a mortgage of about five million dollars and negotations are under way with the Southern Pacific Railroad for the signing of a lease.

A refrigerated warehouse, a meat packer and two food processors are among the promised tenants. One of the prospective tenants, a food processor, is arranging for a 300,000 sq. ft. $250,000 extension for his own use. A ramp running the length of the building will lead to a 600-car parking area on the roof.

Cold Storage Holdings—Both Cooler and Freezer Space Show Increase

AVERAGE November 1 occupancy in public cooler space was 67 per cent—an increase of 7 points since last month. Increased public cooler occupancy was reported in all regions except the West South Central region, there occupancy decreased from 55 to 53 per cent. The most significant gains were in the New England and Middle Atlantic regions where public cooler occupancy increased by as much as 10 points.

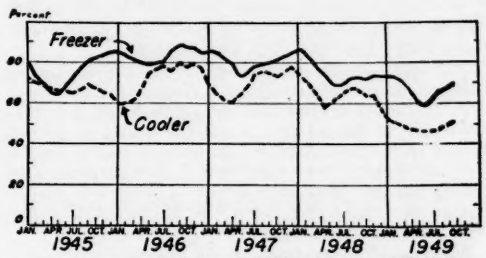
TABLE I—COLD STORAGE HOLDINGS IN PUBLIC, PRIVATE AND SEMI-PRIVATE WAREHOUSES, APPLE HOUSES AND MEAT PACKING PLANTS (000 LBS.)

	Nov. 1, 1949	Oct. 1, 1949	Nov. 1, 1948	Five-year Average
Meat and meat products, lbs.	369,632	362,040	382,124	401,052
Lard and rendered pork fat, lbs.	37,142	48,768	66,526	71,492
Frozen poultry, lbs.	209,927	132,380	154,617	235,301
Creamery butter, lbs.	141,973	154,455	83,412	100,673
American cheese, lbs.	186,491	188,259	167,535	152,511
Other cheese, lbs.	19,725	21,530	23,686	21,341
Shell eggs, cases	497	810	1,685	2,332
Frozen eggs, lbs.	96,578	121,476	169,287	197,794
Apples, bu.	35,566	14,777	22,413	27,712
Frozen fruits, lbs.	346,640	355,552	362,423	392,273
Frozen vegetables, lbs.	386,435	368,552	311,968	280,356
Frozen fish, lbs.	157,554	150,608	148,049	141,403

Freezer space in public warehouses were utilized to a greater extent than a month ago. Warehousemen reported an average occupancy of 70 per cent, an increase of 3 percentage points over last month. In several regions public freezer space occupancy increased by as much as 5 points, whereas normally there is little or no change between October and November. Public general warehouses in Detroit, Milwaukee, Minneapolis, Nashville and Los An[illegible]s were 80 per cent occupied or better for both coolers [illegible]d freezers. On the average, coolers in key cities were only 64 per cent filled, while freezers were 69 per cent filled.

second only to the record cooler weight reported on hand November 1, 1947, of 3.1 billion pounds.

Fresh apples in storage accounted for more than half of the total weight in cooler storage. The net into-storage movement of frozen vegetables, poultry, fish and selected meat items countered the net withdrawals of other freezer-held commodities. Total freezer weight on November 1 amounted to 1.6 billion pounds, or 92 million pounds greater than stocks on hand a year ago.



Occupancy in Refrigerated Warehouses, 1945-1949

November 1 holdings of fresh apples totaled 36 million bushels. This compares with 22 million bushels last year this date and the average November 1 holdings of 28 million pounds. The net increase of 21 million bushels over last month was about average.

Frozen fruit holdings were reduced by 9 million pounds since last month, leaving 347 million pounds on hand. Withdrawals during October were more than four times as great as the withdrawals of a year ago. During the 5-year period ended 1948, the October to November change was an increase of 7 million pounds. Total frozen fruits in storage were below average for this time of year, but several varieties in storage exceeded their average.

TABLE II—PERCENTAGE OF SPACE OCCUPIED BY PUBLIC COLD STORAGE WAREHOUSES (APPLE HOUSES EXCLUDED)

	Net Piling Space (000 cu. ft.)		Nov. 1, 1949 (%)		Oct. 1, 1949 (%)		Nov. 1, 1948 (%)		5-Year Average (%)	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	3,211	5,575	73	80	63	75	51	69	63	83
Middle Atlantic	39,096	29,670	69	75	55	68	62	75	73	87
East North Central	27,067	27,153	70	66	65	65	67	75	57	82
West North Central	10,032	14,205	72	68	71	60	72	70	75	79
South Atlantic	8,758	5,432	53	73	50	71	58	65	70	80
East South Central	3,191	2,698	77	82	72	88	69	81	76	76
West South Central	6,997	6,736	53	47	55	47	57	59	69	75
Mountain	1,667	1,815	62	67	56	65	54	50	71	83
Pacific	17,173	17,759	63	75	59	71	66	75	77	82
United States	117,192	111,043	67	70	60	67	64	72	73	82

Both cooler and freezer-held commodities increased during October, the former by 861 million pounds and the latter by 55 million pounds. The aggregate weight of commodities stored in cooler space amounted to almost 3 billion pounds. This was near a record for this time of year, being

TABLE III—PERCENTAGE OF SPACE OCCUPIED BY PRIVATE AND SEMI-PRIVATE REFRIGERATED WAREHOUSES AND MEAT PACKING PLANTS (APPLE HOUSES EXCLUDED)

	Private and Semi-Private Warehouses						Meat Packing Establishments					
	Net Piling Space (000 Cu. Ft.)		Space Occupied—Per Cent Nov. 1, 1949		Space Occupied—Per Cent Oct. 1, 1949		Net Piling Space (000 Cu. Ft.)		Space Occupied—Per Cent Nov. 1, 1949		Space Occupied—Per Cent Oct. 1, 1949	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	190	122	74	66	90	91	.....	.....	.....	.....	.....	.....
Middle Atlantic	2,042	1,185	79	81	54	46	2,162	461	87	85	86	58
East North Central	3,173	1,583	76	48	82	48	4,525	1,494	85	80	83	80
West North Central	681	2,485	91	90	87	94	20,221	6,643	89	75	86	68
South Atlantic	525	1,640	66	35	35	91	1,451	242	86	98	86	98
East South Central	.....	.....	.....	.....	.....	.....	403	100	73	84	82	91
West South Central	378	87	29	29	29	29	2,825	517	100	100	97	100
Mountain	116	588	87	72	84	71	421	366	100	100	99	100
Pacific	3,259	2,930	60	87	35	86	2,835	595	87	96	89	95
United States	10,364	10,621	71	72	61	74	34,843	10,418	89	80	87	74

NOTE: Blank spaces indicate that insufficient returns were received.

Frozen vegetables increased in greater than average amount since last month. A net increase of 18 million pounds raised total frozen vegetables on hand November 1 to 386 million pounds. Last year, 312 million pounds were in storage, whereas average November 1 holdings of frozen vegetables totaled 280 million pounds.

Butter stocks were down to 142 million pounds on November 1. Net withdrawals during October amounted to 12 million pounds, which compares with 10 million pounds withdrawn last year and the average October to November decrease of 14 million pounds. Butter holdings in the East and West North Central regions were almost evenly divided with 55 and 58 million pounds, respectively.

Cheese held in the East North Central region amounted to 124 million pounds out of a total of 210 million pounds. A year ago cheese in storage amounted to 195 million pounds, while average November 1 holdings for the 5-year period ended 1948 was 176 million pounds.

Shell egg holdings were largely in the Middle Atlantic and East North Central regions. These two areas stored about half of the 497 thousand cases of shell eggs in storage November 1. Frozen eggs in storage totaled 97 million pounds on the first of the month, down 25 million pounds from last month. Normally, there is a net decrease of 34 million pounds. More than a third of the frozen eggs in storage were in storages in the West North Central region where 34 million pounds were on hand November 1.

Frozen poultry increased by 78 million pounds since October 1. The 210 million pounds reported in storage on the first of the month were below the November average, but exceeded stocks of a year ago by 55 million pounds. Turkeys in storage amounted to 75 million pounds—more than twice the stocks of last month and a year ago.

Beef, pork, and other meat items in storage totaled 370 million pounds on November 1. A year ago meat in storage amounted to 382 million pounds while the average was 401 million pounds on November 1. Beef in storage, at 68 million pounds, was 42 million below average for this time of year despite a contra-seasonal in-movement of 5 million pounds. Pork holdings were the largest for any November 1 since 1944, with 210 million pounds reported in storage. Lard and rendered pork fat decreased to 37 million pounds.

Total frozen fish and shellfish in storage November 1 amounted to 158 million pounds. Cured fishery products totaled 25 million pounds. During October there was a net into storage of 7 million pounds of frozen fishery products and net withdrawals of 4 million pounds of cured fishery products. Significant increases in stocks of shrimp and whiting were reported during October.

Storage Outlook

The occupancy level recorded on November 1 in public cooler space undoubtedly was the high point for the year. Only once before, in 1947, has occupancy risen after November 1; normally there is a decrease of 2 points in cooler occupancy between November and December. It is noteworthy that even though public cooler occupancy had been falling to new record lows since July 1 last and on November 1 was 6 points below average, there has been a sharp recovery in cooler occupancy during the last two months. During September and October, successive increases of 7 points in monthly cooler occupancy resulted in a net recovery of 19 percentage points since the seasonal low in April. For the 5-year period ended 1948, the difference between the seasonal low and high point was 7 points. Freezer occupancy in public warehouses still was significantly below average, although for the first time since June 1 last a record low for the month was not reached on November 1. The 70 per cent reported on the first of the month—2 points above the record low reached in 1940—may not yet be the seasonal high since freezer occupancy has increased on several occasions during November with a maximum increase of 3 points.

Cold Storage Stocks of Selected Frozen Fruits and Vegetables

THIRTY-SIX per cent of the frozen peach, raspberry and strawberry stocks classified as to container size were in consumer-sized packages on October 1. This represented the highest ratio of retail packages to larger containers since the first packaging data were collected in August 1947. The high ratio is due, in part, to a greater in-movement of retail-sized packages of peaches than larger sized containers. Forty-six per cent of the peaches classified were in containers of 1 pound or less. This was an increase of 12 points over the percentage reported in retail containers last month. A greater withdrawal of larger-sized containers of raspberries and strawberries during September accounted for the slight increase in the percentage of retail containers for these items.

COLD STORAGE STOCKS OF FROZEN FRUITS AND VEGETABLES IN STORAGE OCTOBER 1 AND SEPTEMBER 1, 1949, IN PACKAGES OF ONE POUND OR LESS (000 LBS.)

	October 1, 1949		September 1, 1949	
	Lbs.	Pct.	Lbs.	Pct.
Peaches	5,688	46	2,480	34
Raspberries	4,843	22	5,394	20
Strawberries	17,551	41	21,837	40
Asparagus	3,889	74	4,446	74
Beans, lima	19,240	57	10,926	59
Beans, snap	21,092	64	21,307	69
Corn, sweet	9,234	33	5,565	35
Peas, green	41,286	55	44,446	57
Spinach	7,987	79	8,563	79

Of the 315 million pounds of selected frozen vegetables in storage October 1, 186 million pounds were classified as to container size. Fifty-five per cent of the classified stocks were reported to be in containers of one pound or less. Retail packages of sweet corn amounted to 33 per cent of the stocks classified for this item, which was little change from the 35 per cent reported last month. A decrease of 2 points was also shown in the percentage of consumer-sized packages of lima beans and peas during September. There was no change in the ratio of retail packages to large-sized packages for asparagus and spinach. Snap beans in retail packages amounted to 64 per cent of the 33 million pounds classified, which compares to 69 per cent reported last month and 50 per cent reported a year ago this time.

Canadian Cold Storage Holdings

THE Dominion Bureau of Statistics of Canada, Agricultural Branch, reports the following commodities held in cold storage on October 1, 1949 as compared with October 1, 1948 and September 1, 1949.

Apples in cold storage on October 1, 1949 amounted to 293,925 bu. as compared with 216,827 bu. October 1, 1948 and 25,211 bu. September 1, 1949.

Frozen fruit holdings in storages and factories October 1, 1949 amounted to 18,383,000 lbs. as compared with 20,163,000 lbs. October 1, 1948 and 18,273,000 lbs. September 1, 1949.

Stocks of frozen vegetables in storages and factories on October 1, 1949 amounted to 7,724,000 lbs. as compared to 7,748,000 lbs. October 1, 1948 and 6,251,000 lbs. September 1, 1949.

Seasonal Progress

(Continued from page 31)

As a businessman with primary interest in the progress and welfare of the ice industry, I sincerely hope that this comfortable financial position will be maintained and strengthened. It means much more than the ability of the Association to meet financial emergencies that may arise. It gives to the Association and the ice industry a tremendously valuable prestige in the circle of other industries and a stability which enables it to attract and hold competent members of your Association staff.

We are also happy to report to you that the membership of your Association has increased substantially during the year. This is significant, first because only two months were devoted to conventional solicitation and second, because this has been a bad year for the industry.

In general, then, I think the situation may be summarized about like this:

1—Total ice sales this year will be off approximately 12 per cent. Some of this decline will be due to the inroads of mechanical refrigerators and point of use ice making machines, but 77 per cent of it will be due to unfavorable weather and economic conditions. That 77 per cent may be regained with the return of normal weather and economic conditions, but the 23 per cent lost to mechanical competition can be regained only through the development of ice sales in new markets where the going will probably be tough and unspectacular, but where the results will be cumulative.

2—Despite the fact that there has been a disappointing decline in sales all through the year, the industry has been significantly free from disturbed markets and costly price wars. Ice prices generally have been maintained and even increased slightly in some areas during the year.

3—The Anti-Trust Division of the federal government is directing more attention to possible infractions of the anti-trust laws in the ice industry, and the indications point to a continuation in that direction.

4—A new Wage-Hour Law has been passed which will materially affect most ice company operations. For many types of company operations it will afford complete exemption. For others, it will incur additional burdens. Because of this, all ice companies should make a careful study of the new law and advisability of rearranging their operations to take advantage of the exemptive provisions.

5—The financial position of your National Association is sound and encouraging. It now has a comfortable reserve, built up over the past eight years, sufficient to enable it to meet most any emergency which may arise.

6—The membership of your Association, which is a true indicator of the Industry's confidence in and appraisal of the value of its work, is the greatest in its history and still increasing.

7—The activities of your Association are now soundly and effectively organized into seven departmentalized groups—Research and Engineering, Public Relations, Personnel Training and Marketing, Legal and Governmental Relations, Fiscal and Accounting, Office Records and Office Supervision, and Production, Mailing, and Shipping. The activities of two of these departments, Public Relations and Personnel Training and Marketing, are of such magnitude as to require still further departmentalization. Your Public Relations Department has its Director of Publicity and Advertising and its Field Service Director. Your Personnel Training and Marketing Department has its Superintendent of the National Ice Marketing Institute.

In conclusion I think we should not feel too badly about this year's operations. We knew during the lush days of the war and immediately afterward that it was going to be a struggle to hold the gains made during that period. We at first thought it would last but one year after the war, but here we have held these gains for several years, and we can hold the majority of them for a number of years to come if we will just use the tools we have at hand and make every effort possible to hold our customers against all forms of competition. This will take work, hard work, but it can be done, and the future is up to us.

Florida Ice Convention

(Continued from page 58)

A. R. Allison, Tampa branch manager of Borden's Dairy, presented the dairyman's point of view on the ice situation. He emphasized that it would be difficult for the dairy industry to operate without ice. It must have flake and snow ice for the preservation of milk and milk products in shipment, and it has been this need that has made it necessary for the dairy industry to resort to automatic ice making machines for their supply of flake and snow ice. Mr. Allison concluded his address by asserting that if the ice industry, would make available this type of ice to the dairy industry at a competitive price, it would discourage the use of the automatic ice making machines.

Preservation of Food Value

An important talk for all ice men was presented by Grace I. Neely, food conservation specialist for the State Home Conservation Administration Office, Florida State University, whose subject was the "Necessity of Cold in Preservation of Food Values." Miss Neely declared that retailers of fruits and vegetables must please the housewife by making sure that they sell the freshest product possible with the most nutritive value.

She said it has been found by research that the use of crushed ice is necessary to maintain the original freshness and nutritional value of fruits and vegetables. She explained that the best temperature for this purpose is provided just before the ice begins to melt and that in this respect ice delivered by the ice man is perfect.

Roger Hernson, vice president and executive secretary of the Florida Restaurateurs Association spoke on "Ice and the Restaurateur." Mr. Hernson emphasized very strongly that unsanitary ice and lack of knowledge in the proper distribution and use of ice are the primary reasons why restaurants resort to the use of ice machines. He said that for continued good relations the ice man delivering ice must take the following precautions: make sure the ice is clean; check the equipment often; check the products; have clean salesmen; see that ice dealers and delivery men are property trained.

Training Ice Salesmen

Contrary to the general accepted opinion of most people, the ice business is not declining, according to Dan Prager, Director of Personnel Training and Marketing Department of the National Association of Ice Industries. The ice industry has the opportunity of entering a period of expansion and prosperity by creating a demand for ice. This demand, he said, can be acquired by maintaining a well-trained sales force. In this connection he touched briefly on the Ice Marketing Institute now being conducted by the National Association of Ice Industries to train ice sales personnel.

Safety in the Ice Plant

L. P. Hoffman, Safety Director of the Florida Power & Light Co., Miami, brought to the convention his idea of safety in the ice plant. He emphasized that this is no different than safety in the home. He suggested that every ice plant owner make a thorough check of his plant for all possible hazards to employees and make an earnest effort to see that these hazards are removed or provided with safety devices. Education of the personnel showing them how to control unsafe conditions also will go a long way to eliminate accidents, he said.

Report Shows Broadened Rural Market for Refrigerated Cabinets

A STEADILY-GROWING market for household mechanical refrigerators and frozen food cabinets in rural areas is indicated in a report on the activities of the Rural Electrification Administration for its 1949 fiscal year, just made public by the U. S. Department of Agriculture. The report indicates that rural electric cooperatives and other REA borrowers constructed 170,000 miles of new electric line over the past 12 months, and that electric service was brought to about 500,000 rural consumers. This represents a 19 percent increase over the 420,518 consumers added to the lines in 1948.

"Our surveys have indicated that anywhere from 10 to 40 percent of new rural electric consumers will buy farm freezers," an REA authority said. "Another trend we notice is to large-size cabinets. Most farmers find a 6-cubic-foot storage box too small. It should be remembered that the farmer is a producer of his family's subsistence for the most part, and therefore is much more likely to use large freezing and frozen-storage space than an urban resident who has a delicatessen on the next corner."

While REA officials have no statistics to indicate how many rural families with deep-freeze cabinets also buy commercially-packaged frozen foods, it is reasonable to assume that the increased installation of home storage boxes on farms will stimulate the sale of frozen foods at retail. This is particularly the case with such items as frozen citrus juices, and certain specialty items like seafoods and fishery products which normally would not be available except through commercial channels.

Indications that a large volume of electrical equipment for farm and home purposes—including deep freeze units—is being used by members of Rural Electrification co-ops is found in spot surveys conducted recently through nine states served by REA. The results of the surveys were compiled by the Farm Electrification Bureau of the National Electrical Manufacturers Association.

The surveys showed that refrigeration units and home freezers were high on the list of "equipment to be purchased in the future" by rural electrification users.

All Industry Exposition

LEADING executives in the commercial refrigeration and air conditioning industry believe that sales in their fields during the first six months of 1950 may reach as high as 25 per cent above the 1949 level for the same period.

This highly optimistic outlook was presented by industry leaders attending the sixth all-industry refrigeration and air conditioning exposition held at Convention Hall, Atlantic City, N. J., November 14 to 18. Some 212 manufacturers presented more than $5,000,000 worth of the latest innovations and improvements in the industry in displays covering more than two acres of floor space.

Sales in the refrigeration and air conditioning industry this year should total between one-and-a-half and two billion dollars according to K. B. Thorndike, president of the Refrigeration Equipment Manufacturers Association. Opening the exposition, he said the industry had reached the stature of "big business."

The optimistic outlook expressed by Thorndike and other speakers is based on the expectation that there will be more stabilization in product quality and better distribution for those products through selectivity of distribution channels.

Refrigerated Storage Costs

(Continued from page 38)

version factor for that month is 0.98118. When we multiply 380.15 by 0.98118 we get 373 tons, as shown at the bottom of Form 4 for coolers.

The information in Form 5 is also needed to complete the cooler refrigeration load for the month. One figure in this form which has not yet been discussed in the tons of refrigeration needed to **hold** the product for a day. This figure can be developed from data supplied in "The Commercial Storage of Fruits, Vegetables and Florists' Stocks" published by the U. S. Department of Agriculture.[1]

Oranges have been taken as an example in this Form. All other products of this character are treated the same way and the total tons per day—1.20 tons—is the result of adding the figures in the total column. This means that in a standard cost month consisting of 30.41667 days 37 tons of refrigeration are needed just to hold the fruits and vegetables in the cooler.

When these two records have been completed we carry through the same procedures for the freezers and sharp freezers. Of course, there is no **hold** load for these spaces because the fresh fruits and vegetables which may have been received in them are quickly frozen and there is consequently no heat generated by them during their stay in subfreezing rooms.

A recapitulation of the commodity loads for the month of August results in the following figures:

		Tons of Refrigeration for August
Coolers—Receipts Load	373	
Hold Load	37	
Total Load		410
Freezers—Receipts Load		773
Sharp Freezer—Receipts Load		92
Total Plant Commodity Load		1,275

How these figures are blended with others to arrive at the cost per square-foot of refrigeration for coolers, freezers and sharp freezers, will be taken up after we have developed the cost per ton of refrigeration for each class of space. We shall also describe how they are used in arriving at individual commodity storage costs.

Our next problem is to follow through the procedures necessary in order to find refrigeration tonnage costs. These will be covered in the next article of this series.

[1] Circular No. 278, U. S. Department of Agriculture. Sold at 20c by Superintendent of Documents, Washington 25, D. C.

Safety Code for Mechanical Refrigeration

IT IS expected that all interests will be coordinated and the final approval will be obtained in the Spring of 1950 on the revised Safety Code for Mechanical Refrigeration. This forecast is continued in a progress report issued by William Hainsworth, Chairman of the American Standards Association Committee which has charge of the revision. The work to correlate and act on the many comments and suggestions received on the sixth draft has consumed much time but is now nearing completion.

In addition the work on correlation with the A S M E Boiler Code has proceded and this objective will be attained shortly. Meanwhile Mr. Hainsworth states that "Reports continue to come in emphasizing the importance of the revised Safety Code and we feel very much encouraged that the new code will receive wide acceptance and justify the many hours and days the various subcommittee members have devoted to this job."

Best Article Award Announced by ASRE

A MONETARY award for technical articles on hermetically sealed refrigeration compressors published in Refrigerating Engineering, official publication of the American Society of Refrigerating Engineers, 40 West 40 Street, New York 18, N. Y., has been donated by the Spencer Thermostat Division of the Metals and Controls Corp., Attleboro, Mass.

The award, to be known as the "Klixon Award", shall be made for the most outstanding paper published in Refrigerating Engineering, on the subject of the electric system of hermetically sealed compressors. While the award is limited to this specific subject, the field covered includes anything which affects the performance or the life of the electric system or its parts.

The award has been announced by the chairman of the ASRE Awards Committee, D.D. Wile of Refrigeration Engineering Inc., in Los Angeles. The winner will receive an award of $100 for the best paper during the award year which extends from September 1 to August 31. The contest shall continue for a period of five years starting September 1, 1949. If less than three suitable papers are published during any one year, the award will be held over until at least three papers have accumulated, thereby extending the contest until five awards have been made.

The presentation of the award will be made at annual meetings of the ASRE which are held in December, and the ASRE Awards Committee shall determine who the recipient will be. Receipt of the Klixon Award shall in no way conflict with other awards for which the paper may be eligible.

Chicago Section, A.S.R.E.

REGULAR meeting of the Chicago Section, American Society of Refrigerating Engineers was held Thursday evening, October 13. Guest speaker was Charles N. Deverall of the Niagara Blower Co., who presented a paper on "Air Cooling Units and their Application."

Mr. Deverall pointed out that for transferring refrigeration effect from a condensing unit to the conditioned space, either directly or indirectly, air-cooling units have largely replaced the older method of pipe-coil bunkers. They accomplish the heat transfer more efficiently and under closer control, but present certain limitations and a few extra problems.

The only important limitation is the amount of air motion permissable for any given application. The fact that the air motion is critical is usually a function of the loss of moisture from the stored product. For example, unwrapped meat requires very low velocity of chilled air while canned orange juice may be frozen by air blast of unlimited velocity. To meet these varying conditions units are offered in sizes and designs capable of producing refrigeration effect of from 130 Btu. per hour to 21,000 Btu. per hour, and air quantities of from 250 Cfm. to 25,000 Cfm. They may be either the disc-fan type or the blower type units, which second type may be used with ductwork to distribute the air in predetermined patterns.

Air cooling unit applications vary in one fundamental: whether the conditioned area temperature is above or below 32 F. For above-freezing rooms the problem of defrosting is handled by any one of several methods, the most common of which is the six-hour (or eight-hour) off-cycle.

On jobs which run normally below freezing some other method of keeping the coil free of frost must be used, since the unit cannot be shut down and allowed to come up to defrosting temperature. Many other methods are used successfully, two of them being the hot-gas method and the fan damper with electric heater system. However, most successful are those methods which employ a sprayed coil utilizing a liquid which has a low freezing point.

Various brine solutions have been devised for this purpose. All of them are critical with regard to strength of concentration since each has in reality two freezing points. During the operation of the system the brine solution takes on added moisture from the air either due to infiltration to the conditioned room or to the product itself giving up moisture. This results in the liquor losing strength until the freezing point is reached. Consequently a regular maintenance schedule of testing and renewing the brine solutions is imperative. However, when the brine is being regenerated there is a high point at which the solution turns to slush.

To eliminate the necessity of this maintenance and also to achieve more uniform operation, certain permanent-type anti-freezes have been developed which are used in connection with automatic regenerators. These regenerators are attached to the side of the air cooling unit and their operation is similar to a fractionator as used in the petroleum industry.

It must be remembered that the spray, brine or other, is not used to accomplish the heat transfer but is used for the sole purpose of keeping the soil frost-free. Intimate contact between air stream and spray is not important. Only the film of anti-freeze on the coil is important. The most efficient system, therefore, would employ the thinnest layer of anti-freeze on the coil.

Three-Fourths of Farms Electrified REA Reports

MORE than three-quarters of America's farms now are connected to electric power lines, according to the Rural Electrification Administration's annual unelectrified farm survey released by the U. S. Department of Agriculture.

The latest REA estimate indicates that the number of electrified farms in the country is 4,582,016 or 78.2 per cent of the total number of farms reported in the 1945 Farm Census. The 1948 estimate was 4,019,476 or 68.6 per cent. The increase indicated is the largest recorded in any single year. Of the record-making number of connections made during the year, an estimated 77 per cent were made by REA-financed cooperatives and other borrowers.

According to the survey, 1,277,153 farms were still without central station electric service, as of June 30, 1949, on the basis of the total number of farms enumerated in the 1945 Census. In addition to these unserved farms, there are hundreds of thousands of unelectrified rural nonfarm dwellings, cross-roads businesses, schools, churches and other rural establishments which are not included in the survey.

When REA was established in 1935, only 10.9 per cent of the Nation's farms were electrified. Of the farms connected to power lines since that time, approximately 57 per cent are now getting service from REA-financed facilities. This year's survey shows that each of 11 States has more than 95 per cent of its farms electrified, but 19 States are still below the national average.

Experience indicates, according to REA, that as the electrification of rural America progresses the job of reaching the remaining unserved farms becomes more difficult. Most of the remaining unelectrified farms are in "thinner" areas where sparse population, typography, or economic conditions constitute obstacles of considerable magnitude.

New Canadian Refrigerator Car Meets Problems of Overhead Bunker

THE idea of a "Freight Train of Tomorrow" may not be as glamorous as its Pullman counterpart, but scientists of the Canadian National Research Council find it just as much a challenge to the imagination. They have now completed a series of tests with a new model refrigerator car designed and installed in the refrigeration and food engineering section of the Division of Applied Biology. The model, representing a quarter-length section of an actual Canadian refrigerator car, is built on a 5-8 linear scale, or somewhat better than half "life-size."

Overhead Bunkers

Canadian refrigerated railway cars are of the overhead-bunker type in which the freezing mixture is stored in a large metal container. Its lower surface cools the surrounding air, the cooled air sinks to the bottom of the car, the warmer air rises and is cooled in turn. This sort of natural air circulation, it is claimed, produces lower and better balanced temperatures than can be obtained in the end-bunker type of car, commonly used by railways in the United States.

On the other hand, a special problem of condensation that does not occur in the end-bunker type has to be solved in the overhead-bunker type by the installation of large drip pans below the bunkers; otherwise the drops of water that form on the cooling surface as soon as the car is opened would fall on the food cargo.

This is where the new refrigerator car model comes in. Test runs conducted with the help of this experimental setup have shown that, if no drip pans are used, car temperatures are lowered by 3.5 degrees. Thus the ideal solution would be to do without drip pans while the car is in transit and to put them up only during loading or unloading operations. This, however, like as many other ideal solutions, is impractical; the entire car would have to be redesigned at great cost.

The experimenters decided that the next best thing to do was to redesign the drip pans. In the new model, the solid metal sheet of the conventional type is replaced by two layers of metal strips that produce a lattice effect and thus give the air a better chance to reach the cooling surface of the bunkers. Moreover, to lower the car temperature still further by extending the cooling surface, the underside of the bunkers has been equipped with fins, which makes it look very much like the insert to an ice cube tray.

Test Runs

Test runs using the new equipment have produced the following results: Use of the new drip pans under the conventional bunkers lowered car temperatures by nearly 2. degrees; use of finned bunkers with conventional drip pans lowered car temperatures about 3.7 degrees. Thus, it is expected that trials of the new drip pans in combination with finned bunkers will result in a lowering of car temperatures by better than 5.5 degrees.

The model refrigerator car on which the test runs are being made is bolted to the floor of one of the laboratories, but the swaying motion of a freight car in transit is faithfully duplicated, since this movement plays an important role in the mixing of salt and ice within the bunkers.

Improvements in refrigerated freight cars are of particular interest in Canada as, at the present time, the railways offer the only regular trans-Canada service for the transport of perishables. Further investigations on this problem are being made.

Unfired Pressure Vessel Code

THE new 1950 unfired pressure vessel code published September 20 is the result of more than ten years' work on the part of the American Society of Mechanical Engineers Boiler Code Committee. Formulated to meet future requirements, the Code provides rules for the design, fabrication, and inspection, during construction, of carbon and low alloy steel vessels, including: (1) those operating at temperatures below -20° F., (2) vessels fabricated primarily by fusion welding and, (3) vessels or parts of vessels fabricated by riveting, or by closely fitted bolting.

Appendices give design formulas, supplementary rules for the design of cylindrical shells under external pressure, rules for bolted flange connections, and a considerable amount of valuable non-mandatory material—including rules for inspection, repair, and allowable pressures for vessels in service.

Some of the important changes of the 1950 Code as compared with the earlier edition are: Clarification of the rules continued from the former code, increased design stresses, completely revised rules for reinforcement of openings, broader inspection rules, capacity certification of pressure-relief devices required, a sliding scale of joint efficiencies for welded pressure vessels, spot examination of welded joints required for vessels designed with the increased unit stresses, and provisions for the design of vessels under external pressures at elevated temperatures.

Due to the fact that this new Code does not cover all types of construction and materials permitted by the 1949 Code, vessels may be built to the 1949 Specifications, and also to the 1949 Specifications in combination with provisions of the 1950 Code, except where this conflicts with the 1949 Code.

Book Review

THE AMERICAN ICE HARVESTS, by, Richard O. Cummings, Published by University of California Press, Berkeley and Los Angeles, Calif., 1949. 184 pages. Heavy cloth cover. Illustrated. Price $3.00. For sale by Nickerson & Collins Co., Chicago, Ill.

This is a study of the rise and progress of the natural ice industry in America, with descriptions of experiments and inventions upon which it was enabled to play an essential role in the preservation of foods. It covers an important phase in early American business development, throwing light on some early customs and filling a gap in understanding of industrial growth and the development of domestic and foreign commerce. It illustrates the part which individual enterprise and ingenuity played in the rise of the present day ice industry, indicating the way it has contributed to marine refrigeration, rail refrigeration and cold storage of perishables. Present day ice company personnel will find this book interesting as well as valuable reading, providing a fundamental knowledge of the beginnings of the American ice industry.

Missing Man Found Frozen in Ice

THE body of Guiseppe Garrone of Allessandro, Italy, who disappeared 39 years ago while climbing Mount Blanc was found recently, perfectly preserved in a large deposit of ice. Garrone who was a teacher and an amateur mountain climber had vanished in July, 1910 in an ice hole in the mountain. He was 34 years old at the time of his disappearance. The body was found this summer, fully clothed and perfectly preserved in the ice.

National Ice Convention

(Continued from page 27)

An unscheduled event on the program then took place when Lee Girton, former president of the association, paid a tribute to Mr. Garvey who had served as president for the past two years and presented a handsome wrist watch as a symbol of respect and esteem and appreciation.

In a brief acknowledgment and acceptance of the position of president, Mr. McLain said he was fully conscious of the honor and responsibility and would fill the position of president to the best of his ability. He said he had no revolutionary new plan and expected to feel his way along, meeting conditions as they arose with the help of the board of directors and other officers of the association. He said he was in complete accord with the plans and program announced from association headquarters and the convention, and pledged his full cooperation and effort in promoting the interests of the ice industry during his tenure of office.

Milwaukee Ordinance would License Refrigeration Contractors

AN ordinance providing for licensing and regulation of refrigeration contractors has been introduced in the common council of Milwaukee, Wis. The ordinance provides, among other things, for a board of examiners composed of a citizen member, a refrigeration service engineer, a refrigeration contractor and a representative of labor. It provides that specialized members shall be appointed by the mayor from lists drawn by the Milwaukee chapter of the Refrigeration Contractors' association, the Milwaukee section of the American Society of Refrigeration Engineers, and local 601, Steam Fitters and Refrigerator Fitters (AFL).

The board would hold two examinations a year and would approve or disapprove the applicants for licenses. It could recommend suspension of a license upon vote of three members, or revocation upon vote of four.

Three classes of licenses would be issued. A class 1 licensee could work on any type or size of refrigeration system. A class 2 licensee could work only on systems rated at less than five horsepower. A class 3 licensee could service only his own (or his company's) system. Each licensee would have to hold, or employ a man who holds, a class A (any size) or B (five horsepower) certificate of competency.

Fees for such licenses would be: Class 1, $50 for the first year, $35 thereafter; class 2, $35 and $25, and class 3, $25 and $15. The ordinance contains a clause which would permit those who have been in the business for a year prior to passage to get certificates of competency without examination. The board would, however, determine the kind of a certificate issued.

Small refrigeration contractors are reported highly critical of the new ordinance, charging that it is really an attempt to freeze out competition and plans were announced by them to appear before the judiciary committee of the council to protest passage of the measure.

Elmer D. Merritt, executive secretary of the contractors association denied the ordinance was intended to restrict competition but that it was designed to protect customers from some contractors who were making a racket of the business.

He said that the measure was intended to replace an obsolete section of the Milwaukee code which requires refrigeration contractors to pay license fees of $100 the first year and $20 thereafter. This section has not been enforced by the building inspector for many years, he and the other contractors said.

Book Review

COLD LOGIC, by Alexander A. McCormack. 212 pages. Published by Nickerson & Collins Co., 433 North Waller Ave., Chicago 44, Illinois. Hard bound cloth cover. First edition, copyright 1949. Price $3.50.

It is the intention of the author in this book to provide the answer to the question "what makes the refrigerating system work?" In doing so, he has built an understanding of the system on simple facts we all know. The complex subject of the physical nature of heat and cold is omitted and in its stead are simple truths each of us experience many times.

Chapters are developed in a logical and easily understood manner and at the end of each chapter is a list of questions that illustrate the practical use of information contained in the chapter. There are a minimum of formulas used in the book.

The book is not limited to the theory and fundamentals, however. There are methods of calculating refrigeration loads, service aids, design factors, and rule of thumb generalities, as well as charts and tables.

The author has a B.S. degree in Mechanical Engineering and is a pioneer in the development of enclosed refrigeration systems using "Freon" refrigerants.

Avery Nominated for President ASHVE

THE nomination of Lester T. Avery, president of the Avery Engineering Co., of Cleveland, for president of the American Society of Heating and Ventilating Engineers in 1950 was announced at the society's headquarters, 51 Madison Avenue, New York. Candidates for other offices submitted by the nominating committee are: First vice president, Lauren E. Seeley, dean of the College of Technology, University of New Hampshire, Durham, N. H.; second vice president, Ernest Szekely, president, Bayley Blower Co., Milwaukee, Wisc.; treasurer, Reg. F. Taylor, consulting engineer, Houston, Texas.

Lester T. Avery

Currently serving as first vice president of the society, Mr. Avery was born in Painesville, Ohio, in 1896. He was graduated in 1918 from the Case School of Applied Science, Cleveland, now known as Case Institute of Technology, with a B.S. degree, and served in the U. S. Naval Reserve during World War I. In 1921 he became district manager of the American Carbonic Machinery Co., in Cleveland, and later in Chicago. He founded the Avery Engineering Co., in Cleveland, in 1929. He is also president of the newly formed Avery Products Co., and is a registered professional engineer for the State of Ohio.

A member of the ASHVE since 1934, Mr. Avery has been active in the affairs of the society as well as in the activities of the Northern Ohio Chapter of which he was president in 1936-37. He is a member of the American Society of Refrigerating Engineers, Cleveland Rotary Club, Cleveland Chamber of Commerce, Case Alumni Association, Cleveland Engineering Society, Air Conditioning Association, Inc., of Cleveland, and is listed in Who's Who in America, Who's Who in Engineering and Who's Who in Commerce and Industry. He is a resident of Shaker Heights, Ohio.

COMING CONVENTIONS

CALIFORNIA ASSOCIATION OF ICE INDUSTRIES
December 13-15, 1949
Fairmont Hotel, San Francisco, Calif.
JACK L. DAWSON, Asst. Secy.

ILLINOIS ASSOCIATION OF ICE INDUSTRIES
December 14-16, 1949
Jefferson Hotel, Peoria, Ill.
W. D. WRIGHT, Secretary

MISSOURI ICE MANUFACTURERS ASSOCIATION
January 9, 10, 11, 1950
Hotel President, Kansas City, Mo.
V. A. ESPHORST, Secretary-Treasurer

GEORGIA ICE MANUFACTURERS ASSOCIATION
January 18-19, 1950
Ansley Hotel, Atlanta, Ga.
WILLSHIRE RILEY, Secretary

SOUTHERN ICE EXCHANGE
January 18-19, 1950
Ansley Hotel, Atlanta, Ga.
WILLSHIRE RILEY, Secretary

AMERICAN WAREHOUSEMEN'S ASSOCIATION
January 30-February 2, 1950
Edgewater Beach Hotel, Chicago, Ill.
WILSON V. LITTLE, Secretary

NATIONAL ASS'N REFRIGERATED WAREHOUSES
January 30-February 2, 1950
Edgewater Beach Hotel, Chicago, Ill.
WM. DALTON, Executive Vice-president

NATIONAL ASSOCIATION FROZEN FOOD PACKERS
February 1-3, 1950
Congress Hotel, Chicago, Ill.
LAWRENCE S. MARTIN, Secretary

OHIO ASSOCIATION OF ICE INDUSTRIES
February 27-28, 1950
Deshler- Wallick Hotel, Columbus, Ohio
GUY W. JACOBS, Secretary

MICHIGAN ICE INDUSTRIES ASSOCIATION
March 2-3, 1950
Hotel Morton, Grand Rapids, Mich.
W. J. CAMPBELL, Secretary

INDIANA ASSOCIATION OF ICE INDUSTRIES
March 8-9, 1950
Lincoln Hotel, Indianapolis, Ind.
ROBT. W. WALTON, Secretary

NORTH CAROLINA ICE ASSOCIATION
March 6-7, 1950
Sir Walter Hotel, Raleigh, N. C.
LEWIS H. POWELL, Secy.-Treas.

EASTERN STATES ICE ASSOCIATION
April 12-14, 1950
Haddon Hall Hotel, Atlantic City, N. J.
SAMUEL FREER, Secretary

New Plant Freezes Shrimp

AN ADDITION has been constructed by the Charleston Freezer Plant, Charleston, S. C., providing for freezer capacity and zero temperature storage. The plant has gone into the commercial freezing of all types of sea foods, poultry and vegetables. It has a capacity of freezing 20,000 lbs. of produce each twenty-four hours and has zero storage capacity for approximately 1,000,000 lbs. of frozen food. It has a floor area of approximately 10,000 sq. ft.

ASSOCIATION DIRECTORY

AMERICAN INSTITUTE OF REFRIGERATION
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433 N. Waller, Chicago 44, Ill.

NATIONAL ASSOCIATION OF ICE INDUSTRIES
Mount Taylor, Secretary, 1706 L St., N. W.,
Washington 6, D. C.

NATIONAL ASSOCIATION OF REFRIGERATED WAREHOUSES
Wm. Dalton, Exec. Vice-Pres., Wm. M. O'Keefe, Secy.,
Tower Bldg., Washington 5, D. C.

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Muriel Washburn, Secretary, 1931 Silver St., Jacksonville, Fla.
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Robert W. Walton, Secretary, Board of Trade Bldg., Indianapolis, Ind.
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MICHIGAN ICE INDUSTRIES ASSOCIATION
Wm. J. Campbell, Secretary, Pleasant St. at Congress, Belding, Mich.
MISSOURI ICE MANUFACTURERS' ASSOCIATION
A. V. Esphorst, Secretary, 3820 Washington St., St. Louis, Mo.
MOUNTAIN STATES ASSOCIATION OF ICE INDUSTRIES
J. R. Espy, Secretary, Espy Ice Co., 2229 - 15th St., Denver, Colo.
NEBRASKA ASSOCIATION OF ICE INDUSTRIES
Frank Vogelsang, Secretary, W. T. Good Ice Co., Lincoln, Nebr.
NEW ENGLAND ICE ASSOCIATION
Raymond Wilber, Secretary, 419 Boyleston St., Boston, Mass.
NEW YORK STATE ASSOCIATION OF REFRIGERATED WAREHOUSES
Chas. G. Ashe, 101 Columbia St., Buffalo 5, N. Y.
NORTH CAROLINA ICE ASSOCIATION
Lewis H. Powell, Secretary, Capital Ice & Coal Co., Raleigh, N. C.
NORTHWEST ASSOCIATION OF ICE INDUSTRIES
D. D. Stewart, Secretary, American Bank Bldg., Seattle, Wash.
OHIO ASSOCIATION OF ICE INDUSTRIES
Guy W. Jacobs, Secretary, The Steubenville Ice Co., Steubenville, Ohio
OKLAHOMA ASSOCIATION OF ICE INDUSTRIES
W. A. Hadley, Secretary, 242 Key Bldg., Oklahoma City, Okla.
PACIFIC STATES COLD STORAGE WAREHOUSEMEN'S ASSOCIATION
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Geo. L. English, Secretary, P. O. Box 603, Columbia, S. C.
SOUTHERN ICE EXCHANGE
Wilshire Riley, Secy.-Counsel, 421 Rhodes Building, Atlanta, Georgia
SOUTHWESTERN ICE MANUFACTURERS ASSO.
P. A. Weatherred, Secy. Counsel, Mercantile Bank Bldg., Dallas, Texas
TENNESSEE ICE MANUFACTURERS' ASSOCIATION
W. E. Harlan, Secretary, Mt. Pleasant Ice Co., Mt. Pleasant, Tenn.
TRI-STATE ASSOCIATION OF ICE INDUSTRIES
L. R. Girton, Secretary, 260 Boyce-Greeley Bldg., Sioux Falls, S. D.
VIRGINIA ICE MANUFACTURERS' ASSOCIATION
H. H. Snyder, Secretary, Alexandria, Va.
WEST VIRGINIA ASSOCIATION OF ICE INDUSTRIES
E. Dana Smith, Secy., Diamond Ice & Coal Co., Charleston, W. Va.
WISCONSIN ASSOCIATION OF ICE INDUSTRIES
Paul F. Hoff, Secretary, 1500 East Locust St., Milwaukee, Wis.

Fires and Accidents

Alamosa, Colo.—A natural ice storage house operated by a division of the Denver Ice & Cold Storage Co., which originally cost $300,000 was recently destroyed by fire. The ice in the storage supplied a large vegetable producing section around the plant. The owners are rushing replacement of the storage to be ready for the coming natural ice harvest.

Needham, Mass.—Needham Ice Co. plant, including two trucks and an automobile was destroyed in a recent fire here. Loss was estimated at $15,000. The company was owned and operated by Frank McIntosh.

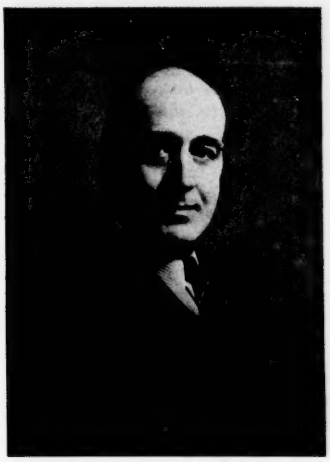
Guaymas, Sonora, Mexico.—The quick-freeze plant being erected here to quick-freeze Sonora livestock products for shipments to Greece and other European countries, as reported in November 1949, Ice and Refrigeration, has been delayed for several weeks after a tropical storm caused three plant building walls to collapse.

McDonald, Pa.—Fire broke out in the McDonald Ice Company plant here recently, releasing heavy ammonia fumes and causing $35,000 damage to the two-story building.

OBITUARY

Leon A. Bailey

A GREAT loss was suffered by the ice and refrigerating warehousing industries with the death of Leon A. Bailey of San Francisco, Calif., well-known throughout the ice and refrigerated warehousing industries, particularly in California and the Pacific coast. Death came in his office in the Sheldon Building, San Francisco, from an unexpected heart attack at noon Wednesday, November 2. He was 60 years of age.



Leon A. Bailey

Mr. Bailey had been actively associated with the Pacific Coast ice and refrigerated warehousing industries for many years. His first connection was secretary of the Warehousemen's Association of the Port of San Francisco in which position he served for 37 years. He then became secretary-manager and was a past president of the California Warehousemen's Association, serving that association for 28 years. He was executive manager and served a term as president for the Pacific States Cold Storage Warehousemen's Association and was in that organization 26 years. He was secretary of the Los Angeles Warehousemen's Association for 23 years and was executive manager of the California Association of Ice Industries for 16 years. He was an honorary member of the American Warehousemen's Association and Tariff Agent for the California Warehousemen's Tariff Bureau.

He was a member of the Mission Lodge 69 Free and Accepted Masons of California and also of the Islam Temple, a member of the Olympia Club and of the San Francisco Commercial Club.

Mr. Bailey was a native of Michigan and came to California at an early age. He was recognized as the leading expert in warehousing rate questions in California and spent a considerable amount of time on this subject with the California Legislature and the California Railroad Commission.

He is survived by his widow, Mrs. Aileen Bailey. In addition, he had as many friends and acquaintances in the ice and warehousing industries, particularly on the Pacific Coast, as any man in the United States.

Jos. A. Martocello

THE death of Jos. A. Martocello, President of the Jos. A. Martocello & Co. of Philadelphia, Pa., manufacturers of ice making equipment, occurred October 19, 1949, resulting from a stroke after a lingering illness of three years.

He was 61 years of age, born in Castanea, Pa. As a young man he was employed at Cincinnati, Ohio, as a tool, die and gauge maker. He started in the ice business by repairing ice cans. In 1918 he started his business of manufacturing a complete line of ice making equipment which he designed and promoted.

Jos. A. Martocello

The Franklin Institute awarded Mr. Martocello their scientific degree for the promotion of the Mechanical Arts for his contribution to the ice and refrigeration industries. He was a member of the Franklin Institute, American Society of Refrigerating Engineers, American Society of Heating & Ventilating Engineers and the National Association of Practical Refrigerating Engineers.

Mr. Martocello had faithfully served the ice industry for 31 years and is well known throughout the country. He had all through the years a perfect record of attendance at the ice conventions.

He is survived by his widow and son, Jos. A. Martocello, Jr.

Enos Taft Lovell

THE death of Enos Taft Lovell, for many years connected with the Gulf Public Service Co., occurred at his home at Thibodaux, La., October 6. He was 66 years old.

Born at Climax, Mich., Mr. Lovell came to Crowley in 1892 with his parents and in 1925 he moved to Thobodaux. For many years he was manager of his father's plantation, Lovell Farm, located between Rayne and Crowley. For the past twenty years he was associated with the Gulf Public Service Co. Inc., and its predecessor company the Louisiana Public Utilities Co. Inc. He retired from active service January 1, 1949, and prior to that time was division manager of the company's Thibodaux division.

He was active in the affairs of the ice industry and until he retired was a director of the Delta States Ice Association. Surviving besides his widow is Mrs. Dorcas Lovell Butler of Atlanta, Ga., a daughter.

MARCO B. VUCAN, owner and operator of an ice company at Los Angeles, Calif., died November 14. He was 35 years old. He had been a resident of Los Angeles for 25 years, moving there from Miami, Ariz. He leaves his widow Mrs. Bernice Vucan and a son James.

Lawrence L. Ferree

THE death of Lawrence L. Ferree, Sr., long an outstanding figure in the ice industry and the utility field, occurred at his residence in New Iberia, La., on September 30, at the age of 71. He is survived by his widow, Mrs. Nellie Freeland Ferree, one son, Lawrence L. Ferree, Jr., of Hellertown, and a daughter, Mrs. E. T. Seeley, Jr., of Newcastle, Del.

Mr. Ferree was a native of Pennsylvania and for many years held an executive position with the old Harrisburg, Light, Heat & Power Co. Later he held several positions with utility operating groups in various locations throughout the country. He came to New Iberia as general manager of the Gulf Public Service Company about nineteen years ago. He retired in 1945 at which time he was president of Gulf Public Service Co. Inc.

Mr. Ferree was active in the affairs of both utility and ice associations. For many years he was a director in the Delta States Ice Association, and served one term as president of that association. He was a member of the Masonic fraternities.

D. M. Jones

THE death of D. M. Jones, owner of the Independent Ice plant, Durant, Okla., occurred in his home in Dallas, Tex., Thursday morning, September 22 following an extended illness. He was 76 years of age. Mr. Jones who was a pioneer citizen of Dallas, besides owning the Durant ice plant was also owner of many plants in Texas and Oklahoma. He was an extensive real estate owner in Dallas and in the southwest, and was well known as a financier and philanthropist. He is survived by his widow, two sons and one daughter.

F. J. Hood

THE death of F. J. Hood, president of the Ansul Chemical Co., of Marinette, Wis., occurred November 10 at the St. Moritz hotel. Mr. Hood had been associated since 1927 with the company, which was founded by his father, the late F. G. Hood. In 1915 he was elected vice president, director in 1944 and president in 1948. He was a past president of the Refrigeration Equipment Manufacturers Association. Surviving are his widow, Mrs. Ruth Hood; a son, Thomas Hood and a daughter, Miss Patsie Hood.

Arthur W. Culkin

THE death of Arthur W. Culkin who served as manager and vice-president of the Neosho Ice Co., Neosho, Mo., from 1914 to 1942, occurred at his home following a long illness. Mr. Culkin was a past-president of the Neosho Ad Club, Past Master of Neosho Lodge No. 247, A. F. and A. M., and past-commander of the Neosho Commandery. He was a member of the Neosho School Board for some years and has served in various capacities on the official board of the Methodist Church. He is survived by his widow and two daughters.

WALTER J. MAY, who retired ten years ago as refrigerating engineer and director of the Bronx Consumers Ice Co., Mt. Vernon, N. Y., died October 15 at the age of 77. His daughter, Mrs. Dorothy May Lochner, survives. Mr. May's wife, Mrs. Abbey Andrews May, died three years ago.

John E. Forbes

THE death of John E. Forbes, former president and owner of the Concord Ice Co., Concord, Mass., occurred recently. He was 66 years old. Mr. Forbes was born in Canton, Mass. and had lived in Concord since 1921 when he purchased the ice business from Frank Mason and became president of the company in which position he served until he sold the plant in 1947.

Mr. Forbes was past ruler of Concord Order of Elks, Hawthorne Chapter O.E.S., Concord Rod and Gun Club, the Shriners, Musketaquid Sportsman's Club, King Soloman Lodge of Masons and a 32nd Degree Mason. He was a member of Trinitarian Congregational Church. Surviving are his widow, one daughter and one son.

Fred Roy Early

THE death of Fred Roy Early, vice-president of the Elliott Ice Co., Charlottesville, Va., long active in Masonic circles and former chairman of the City Republican Committee, occurred October 25 following an extended illness. He was 63 years old. Mr. Early came with his parents to Charlottesville when he was nine years old. For over 20 years he took an active part in Masonry, serving at one time as high priest of the Grand Chapter of Royal Arch Masons in Virginia. He also was a member of Monticello Lodge I.O.O.F., former member of the Kiwanis Club and former chairman of the Christian Business Men's Association. He leaves his widow, Mrs. Annie Early; two daughters, Mrs. Linwood Robinson of Charlottesville and Mrs. W. C. Tiver of Washington, N. C., and three grandchildren.

CHARLES BEINERT, founder and former president of the Staten Island, N. Y., Hygeia Ice Co., died October 27 at his home, 501 Van Duzer St., Stapleton, Staten Island. He was 92 years old. Mr. Beinert, following his successful venture in the ice business, was a founder and former director of the West New Brighton State Bank and a director of the Richmand County Board of Education and was a charter member of the Staten Island Order of Elks. He is survived by two sons, Gustave L. and Capt. David L. Beinert, U. S. A., and two daughters, Mrs. Rose Kettner and Miss Cecelia Beinert.

FRANK BOLCEN, chief operating engineer at the City Ice & Fuel Plant, Sandusky, Ohio, died suddenly at his home, November 21. He was 64 years old. A life-long resident of Sandusky, Mr. Bolcen was a member of St. Paul's Lutheran Church and Perseverance Lodge, No. 329 A. F. & A. M. He leaves his widow, Mrs. Elizabeth Bolcen and a son, Robert F. Bolcen.

CHARLES H. HARRIS died recently at his home in Millbury, Mass., at the age of 82. He conducted the C. H. Harris & Son oil and ice business of which his son, E. Paul Harris, the present owner, is the fourth generation to conduct the business. Mr. Harris was a former Millbury selectman and was also a trustee of the Millbury Savings Bank.

EDWIN CLARK IVEY, retired ice manufacturer of Lynchburg, Va., died recently at the age of 74. Before his retirement, Mr. Ivey was active in the business life of Lynchburg. He established the Standard Ice Co., and the Orange Pure Products Co., an ice cream manufacturing business.

You Could Take it Apart and Check it . . . . . .

BUT, You Can Judge it Best by its Maker

After a shell and tube vessel has been fabricated, it's difficult to examine it thoroughly. You could remove the heads, note the tube spacing, examine the rolling in of the tubes and check the water circuiting in the head castings—but your trust in the builder is still the best indication you have of its quality.

Specifications can deal with qualities like efficient design and care of fabrication. But they can't insist that the vessel be built by capable, experienced hands. They can't demand that the vessel be tested by men who know heat exchangers so well that gauges and instruments only serve to confirm what they know instinctively to be true. Specifications can't call for these things—but you can, by buying from Vilter.

A reputation that has been built and guarded from the beginning of mechanical refrigeration stands behind every Vilter product. When you buy Vilter you know that the highest quality so necessary to the reliability you must have is in every piece of Vilter equipment. If you want to be rid of trouble, call in the Vilter man on your next job.

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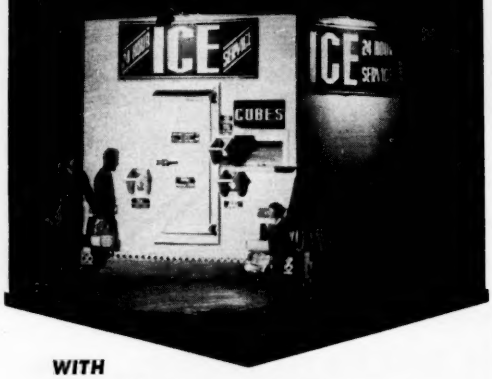
Ammonia and Freon Compressors • Pak Icers • Evaporative and Shell and Tube Condensers • Pipe Coils • Valves and Fittings

Slash Distribution Costs
..Step Up Sales Volume

ICE CUBES *Automatically*



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STURDY-BUILT REFRIGERATED ICE VENDING STATIONS

More and more ice merchandisers throughout the nation are using automatic ice vending stations to turn "off season" slumps into higher profit periods.

By trimming costly off season truck deliveries to a minimum Sturdy-Built Stations carry the winter load and they do it more economically. Sturdy-Built Stations serve the occasional ice users who account for 27% of all station sales; a market which hitherto has been untapped by the ice industry.

Progressive ice men are out to capture this extra 27% as well as the *"after hour"* customers. 45% of Sturdy-Built sales are made between 4:00 P.M. and 8:00 P.M.

It's been tried and has been proved — Sturdy-Built sells more ice to more people — more economically — which means greater profits to you, for years to come.

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Highland Park Station
Des Moines, Iowa

IN THE WEST

S&S ICE VENDING MACHINES

S&S VENDING MACHINE CO.
670 Lincoln Avenue
San Jose, California

Sales and Reorganizations

Palmetto, Fla.—City Councilman Lyle Skene and his partner, Jud Tisworth, recently purchased the Ellenton Ice Co. from the mayor of Bradenton and his partner. The purchase also includes stock owned by Mayor Sterling Hall and Bob Mower in Producers Ice Delivery Co. here. Purchase price was reported to be about $40,000.

Decatur, Ill.—John B. Graves, Jr., has sold controlling interest in the Pure Ice & Fuel Co. here to John Valentine of Glendale, Calif. Mr. Valentine is now president and Mrs. Valentine is secretary-treasurer of the company.

Boonville, Ind.—The Boonville Ice & Storage Co. here which had been placed in the hands of receivers several months ago, was sold October 18 at public auction to John P. Lutz, local attorney, who represented a group of unidentified business men of this city. The purchase price was $28,525.

Chapman, Kans.—Sale of the Chapman Ice Co. to the Belle Springs Creamery Co. of Abilene, was announced recently by Purlay Freeman who has operated the local concern for the past 23 years. The new owners will continue to operate a delivery service here as well as the ice dock.

Annandale, Minn.—F. M. Comstock of Mitchell, S. D., has purchased the ice business of Louis Larson here.

Walker, Minn.—Oluf Neilsen of Luck, Wis. recently purchased the Pequot Lakes Dray & Ice Co., here.

Mountain Grove, Mo.—McCaskill & Sons, operating ice companies at Cabool, Houston and Fort Leonard Wood, recently purchased the frozen food locker plant here from Gerald Clausing. The plant will be operated in connection with the company's ice and locker system in Cabool.

Red Bank, N. J.—Abraham Kruman of Asbury Park, has purchased the Seaboard Service Ice Co. here and announces there will be no operating changes. The purchase included manufacturing plants here and Neptune City and all the substations maintained by the company.

Albuquerque, N. Mex.—Acquisition of an ice manufacturing plant, delivery and commercial cold storage facilities of the Albuquerque Ice Co., here, have been announced by the Southwestern Public Service Co.

Chattanooga, Tenn.—The Arrow Transfer & Storage Co., formerly a partnership has been purchased by a new corporation of the same name. Officers are: president, W. C. Hudlow, Sr.; vice-president and general manager. W. C. Hudlow, Jr.; and secretary-treasurer, S. B. Lowe. The same facilities will continue to be operated by the new corporation.

Union City, Tenn.—Announcement was made recently of the consolidation of the Citizens Ice & Coal Co., and the Home Ice Co. of this city, into a new corporation to operate under the name of the Hi-Test Products Co. with J. Morgan Sedberry, as manager, and John M. Owens, as assistant manager. The new company will operate the Home Ice Co., plant on East Main St. without alteration, to produce ice. A $25,000 remodeling program has been started at the plant of the Citizens company, to fit the plant for the continued handling of coal, fuel oil, etc.

Coolidge, Tex.—The Wortham Ice and Frozen Locker Plant has been sold to Bill Hall of Dallas and will be operated under the name of Coolidge Ice and Frozen Foods, Inc.

Hallettsville, Tex.—Jodie Bludau, owner of the Citizens Ice Co. plant here for several years, has taken over the Bludau Ice plant and operated both plants this past season.

Hubbard, Tex.—Jim Willingham recently sold the Hubbard Ice Co. to Bill Edwards of Dallas. G. H. Shields is present manager.

New Incorporations

El Paso, Tex.—A 50 year charter of incorporation was granted the Wholesome Ice Company October 7, 1949. Incorporators are Blanke K. Brown, Robert Brown and L. Kopilowitz. Authorized capital stock was listed at $5,000.

San Antonio, Tex.—Woodlawn Ice Station, has been granted a 25 year charter of incorporation. Authorized capital stock was listed at $500. Incorporators are Henrietta Jones, Julia Garza and James M. Jones.

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Soda Ash . . . Bicarbonate of Soda . . . Liquid Chlorine . . . Dioxide
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PURITY WITH A PEDIGREE!

The forebears of Mathieson Ammonia are "blue-ribbon" quality...Mathieson sees to that. Mama Hydrogen and Papa Nitrogen are pure-bred—completely free from every trace of contamination.

Yes, Mathieson Ammonia has an enviable pedigree, but wait! . . . what happens before it reaches you? Well, for one thing, it's purged . . . moisture, non-condensable gases and other impurities are eliminated. Cylinders are thoroughly checked. Valves get a special going over. That good pedigree ammonia is available promptly in 100- and 150-lb. cylinders from any of 44 warehouses. Mathieson Chemical Corporation, Mathieson Building, Baltimore 3, Maryland

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● With the Niagara "No-Frost" Method, your refrigerating operation is never interrupted for defrosting since at no time is there ever any accumulation of ice or frost on the coils of the Niagara "No-Frost" Spray Cooler.

If you are *pre-cooling*, the full capacity is always there to handle the "live load" and you get quicker chilling of your product to the core with no rise in temperature at any time. If you are *freezing*, the process is continuous and faster, and you get more production. If you are *holding* fresh or frozen food, there is never any temperature rise to endanger the quality.

The Niagara "No-Frost" Method saves money in its operation. A user recently said: "We added a new freezing room to our plant without any additional cost for power". This was accomplished because the Niagara Aeropass Condenser held the head pressure down to the minimum for the entire plant, while the Niagara "No-Frost" Spray Cooler operated at higher suction pressure.

Write for Niagara "No-Frost" Bulletin 105 and details of operation for the type of refrigeration in which you are interested.

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NEW PLANTS AND IMPROVEMENTS

Information pertaining to proposed new plants utilizing refrigerating equipment, as well as additions, improvements, and rehabilitation of existing plants. News regarding such new plants and additions is invited for publication in this department.

CALIFORNIA

Albany, Calif.—Wells Alaska Ice Co. last month installed six 24-hour S & S Ice Vending machines.

Los Angeles, Calif.—A new office building and warehouse costing approximately $250,000 is being built for Standard Brands, Inc., at 2660 South Eastern Ave. The latest type of automatic refrigerating equipment will be a feature of the new building with refrigerator units available for both normal and low temperature storage.

San Francisco, Calif.—Luce & Co., wholesale meat jobbers, will immediately expand refrigerated storage space 45 per cent at their plant here to take care of increasing busines. Ray Luce, co-owner, said the addition will add 90,000 lbs. to the company's cold storage facilities.

San Francisco, Calif.—A warehouse, cold storage and manufacturing building is being considered for erection on an eight acre site between 5th, 6th, Chanel and Indiana. The six-story building will cost approximately $8,000,000. John J. Moore Co. Oakland is negotiating for the property for a group of businessmen.

GEORGIA

Buena Vista, Ga.—A new ice-making and cold storage plant is now nearing completion here. Called Lion's Ice and Cold Storage Plant, the new plant will be housed in a steel and aluminum building with a brick front and will provide quick freeze, slaughter house and lock facilities in adition to making ice. Owned by A. G. Wells, the total cost of the new plant with is equipmen witll be $175,000.

IDAHO

Boise, Idaho.—The third phase of a $150,000 modernization project that has been under way for nearly three years at Bohemian Breweries, Boise plant, has been started according to Steve T. Collins, manager. Nearly $40,000 worth of new equipment will be installed.

LOUISIANA

Ponchatoula, La.—A new system of quick freezing foods commercially is being established in the plant here of Marion T. Fannaly by Clarence Birdseye.

MAINE

Rockland, Me.—F. J. O'Hara Company officially opened an ice-producing plant here recently. Featured at the open house were 300 lb. cakes of clear ice into which workers had frozen bouquets of flowers, lobsters, redfish and haddock. Francis J. O'Hara is president of the F. J. O'Hara fish and cold storage interests.

MICHIGAN

Detroit, Mich.—Two Model 16C Sturdy Built Ice Vending stations recently installed by Borin Bros. of this city will make 10 and 25 lb. bags of processed ice as well as block ice, available every day throughout the winter. Containing three S & S ice vending machines, the unit was delivered from the Des Moines plant of F. B. Dickinson Co.

MINNESOTA

Minneapoolis, Minn.—Recent installations for better ice service here include two Model 20B Sturdy Built Stations operating for Cedar Sanitary Ice Co. Using three S & S ice vending machines, both units dispense processed ice in bags as well as 25 and 50 lb. pieces.

MISSISSIPPI

Oxford, Miss.—The Home Ice Co. is constructing a large poultry dressing plant that will serve all this section of North Mississippi, according to anouncement made by the Oxford Chamber of Commerce recently. Dan Roy, local manager of the ice company, said that the refrigeration capacity of the ice plant, particularly in the cooler months, can be put into use for the operation.

NEW YORK

Herkimer, N. Y.—The Ice Service Corp recently installed a Sturdy-Built Model 20C ice vending station. S & S equipped the self-contained unit supplied by F. B. Dickson & Co. of Des Moines, Iowa.

NEW JERSEY

Jersey City, N. J.—The Union Terminal Cold Storage Co. Inc., recently put into operation a modern pear-ripening room of two-car capacity just completed in connection with its cold storage plant. This is believed to be the first cold storage plant to make a ripening room available to customers.

OREGON

Pendleton, Ore.—The Smith Frozen Foods Co. of Oregon which recently took over the freezing facilities of the F. G. Lamb Co. at Milton, announced that the new venture will not affect the canning and frozen foods business here, but will mean a new unit in the operation of the Smith freezing business. Other plants are at Lewiston, Idaho, and Brigham and Clearfield, Utah.

SOUTH CAROLINA

Columbia, S. C.—A new plant is being constructed for the Wilson Owens Ice Cream Co. on Two Notch road at a cost of $75,000.

York, S. C.—Leon C. Smith, head of the York Oil Mill Co., recently announced completion of a modern ice plant here. The plant has capacity to produce enough ice for the entire Western York County.

TEXAS

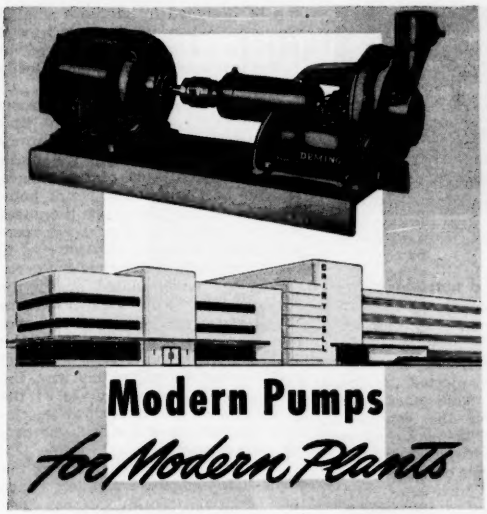
Big Spring, Tex.—Southern Ice Company has extended its ice docks by appoximately 600 feet. This gives the company around 1,500 front feet of leading space at this location for re-icing fruit blocks. This will accommodate thirty-five cars at a time.

Port Lavaca, Tex.—The U. S. Cold Storage Co. has purchased the operation of the Municipal Freezing Plant here. This plant, which was built and previously operated by the city, was acquired by the U. S. under a long time lease. The plant was built to develop the rich marine and agricultural resources of this area. The capacity provides for quick freezng 150,000 lbs. per day.

WASHINGTON

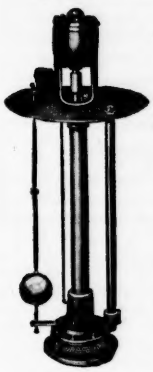
Olympia, Wash.—A three story addition to the Olympia Brewing Company's buildings at Tumwater is being made. The added space will increase the storage and fermenting capacity of the company's facilities. Also being installed are forty-three 500-barrel beer storage and fermenting tanks. Completion of the entire construction program is expected early next spring.

Seattle, Wash.—Ice Delivery Co. recently established additional 24-hour ice vending depots. S & S Vending Machine Company supplied the equipment.



Modern Pumps *for Modern Plants*

. . . and for modernizing the pumping equipment of old plants. Deming offers you a complete range of selection for type and capacity to meet every need.



For example, Deming Vertical Sump Pumps incorporate the latest developments to insure highest efficiency and dependability. The extensive line includes numerous sizes in capacities from 10 to 3200 gallons per minute with heads up to 120 feet and speeds from 860 to 1750 r. p. m. for motor drive. Write for BULLETIN 4605.

Deming Deep Well Turbine Pumps are used widely in your industry for dependable, low cost water supply. Complete information in BULLETIN 4700-8. Write to:

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You don't have to shout for fast, prompt Ammonia service...

Just... write, wire or telephone your local Armour branch office. Immediate shipment will be made from the nearest plant. Armour's Anhydrous Ammonia is available in 50, 100 or 150 pound cylinders. It's pure and dry ... free of moisture and non-condensable gases. And, to insure trouble-free operations, every cylinder is tested and checked before shipping to give positive assurance of fine quality.

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NEW AND IMPROVED EQUIPMENT

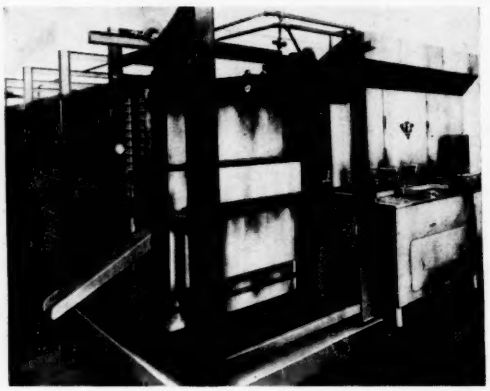
MACHINERY-APPLIANCES-PROCESSES

Information contained in this department is furnished by the manufacturer of the article described and is not to be construed as the opinion of the Editor.

Continuous Packaged Quick Freezer

DEVELOPMENT of a continuous packaged quick freezer capable of handling 4000 pound-packages of frozen food per hour or hardening 8000 pint packages of ice cream in a continuous cycle has been completed by Freezing Equipment Sales, Inc., custom engineers and control specialists, 415 West Market St., York, Pa.

From the time that unfrozen packages of food or unhandled ice cream are delivered to the machine by conveyor from packaging or filling machines until the frozen or hardened packages are ejected to the cartoning line, no hand operations are required. When the conveyor belt has delivered 15 packages of food or 24 pints of ice cream to the loading table, the packages are pushed onto the push-carry belt which delivers them to the freezer



The freezing tray section of the Freez-Pak, which is enclosed in the freezer room, is shown at the left side. One tray is in loading position and when shelves are filled, it will start its cycle through the air blast. Packages enter from the right side and frozen packages are pushed out the chute at the left.

The Freez-Pak resulted from coordinated engineering between Freezing Equipment Sales, Inc., and V. C. Patterson & Associates, professional engineers, who were retained as consultants. All control circuits and mechanisms responsible for the automatic operation of the Freez-Pak are located outside of the cold room. The moving parts which are necessary in the cold room are hydraulic, insuring precise operation at all times. The cycle timing is electrically locked and operated by positive mechanical means.

The Freez-Pak is attractively designed, the counter where packages are received being built of stainless steel while the freezer room is clad in aluminum and insulated with cork and aluminum.

tray shelf. In the same operation, the frozen packages are ejected from the opposite side.

The packaged food freezer consists of a structural steel framework with 80 aluminum freezer trays which contain 12 shelves 5-ft. wide. The ice cream quick hardener uses 50 hardener trays with 7 shelves 5-feet wide. The freezer tray never leaves the cold room. Since only the food or ice cream packages enter and leave the cold room, there is no chance for frost or ice to build up on the freezer trays.

After a shelf is loaded, the tray indexes up one position and is ready to receive the next charge of packages. Four thousand packages of food or 8,000 pints of ice cream are loaded each hour. The Freez-Pak can be designed to handle a smaller capacity. When the freezer tray is loaded, it is automatically pushed into the low temperature, high velocity air blast.

On food freezing, the freezer room handles 14,600 packages at one time and the freezing cycle is approximately 3¾ hours while on ice cream, the capacity is 8400 pint packages, and the hardening cycle is one hour. The freezer tray travels on the upper level to the rear of the freezer room and then is automatically lowered to the lower track to complete the cycle.

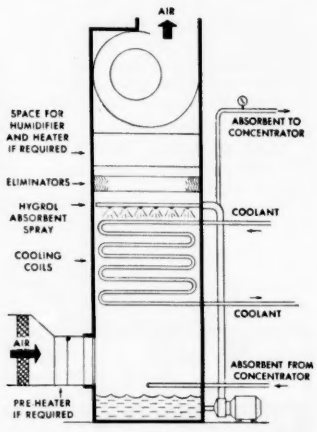
Cold air is circulated over the packages by four axial-flow fans which blow the returning air over the evaporators across the coldest packages on the lower track and up over the top trays. In this way, the coldest air is always against the leaving package. Refrigeration circuits are arranged for fast defrosting of evaporators.

Because of the compact design, the Freez-Pak occupies much less space than present freezing rooms. The space required for a machine of 4,000 pounds per hour capacity is 22 ft. long, 19 ft. 11 in. wide, and 8 ft. 9 in. high for the loading and discharge section.

Access doors to the freezer room are provided through a full length stainless steel freezer room door on the front and a rear door which open into the evaporator fan section.

New Controlled Humidity Method

THE Niagara "Controlled Humidity Method" is a new system of air conditioning giving complete control of temperature and relative humidity, holding constant conditions or varying them at the will of the user. Especially, it provides dry air at normal atmospheric temperatures with little or no refrigeration required. A condition of 15 grains of



NIAGARA CONTROLLED HUMIDITY METHOD — FLOW DIAGRAM

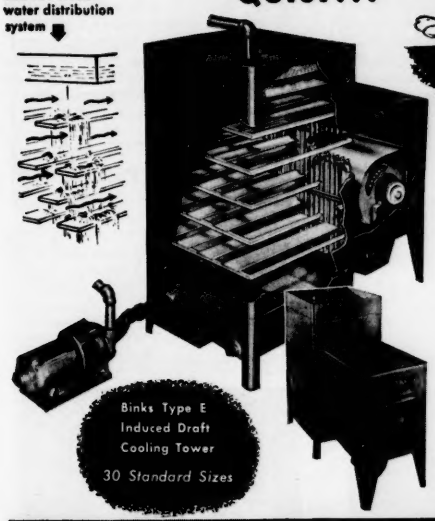
Diagram showing new nozzleless water distribution system

Quiet...

a NEW type cooling tower

for use with "packaged" water-cooled air conditioning and refrigeration systems

A new type of water distribution system eliminates the use of spray nozzles in Binks Type E blower-type cooling towers. Distinguished by extremely quiet operation and high efficiency, these towers are ideal for use with "packaged," water-cooled air conditioning and refrigeration condensing units, such as are installed in small businesses and residences. Installations may be either outdoors or indoors.



- All galvanized steel construction
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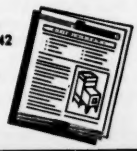
- Attractively priced
- Easily installed
- No internal piping
- Low pumping head
- Shipped assembled
- Low operating cost

Write today for Binks Bulletin No. 42 which includes complete data on all 30 Type E cooling towers.

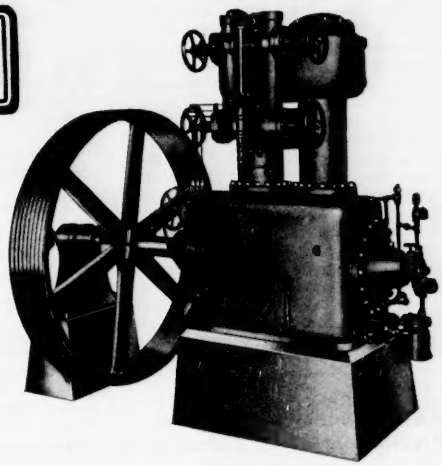


THERE'S A BINKS SPRAY NOZZLE FOR EVERY SPRAY JOB

Binks MANUFACTURING COMPANY

REPRESENTATIVES IN ALL PRINCIPAL CITIES ■ 3130-38 CARROLL AVENUE, CHICAGO, ILL.

Sterling DEPENDABLE REFRIGERATION



The phrase "STERLING DEPENDABLE REFRIGERATION" is more than a slogan—it's a fact.

Built with rugged strength for endurance, with advanced design for efficiency and economy of operation, STERLING Ammonia Compressors are the product of more than fifty years of "know how" in the manufacturing of refrigeration machinery and equipment.

A complete range of sizes insures the correct compressor for each application.

Deliveries are, at present, current—most models of compressors are available from stock.

For complete information, see your nearest STERLING distributor, or write the factory.

REYNOLDS MANUFACTURING CO.

SPRINGFIELD *"Builders of Fine Refrigeration Equipment"* **MISSOURI**

moisture per pound of air at 85 F. dry bulb temperature has been produced without refrigeration.

The apparatus is enclosed in a casing through which the air is drawn by fans. The air is filtered and then enters a chamber where it is dehumidified in passing through a spray of "Hygrol" Liquid (a hygienic hygroscopic chemical that absorbs the air-borne moisture and contains no salts or solids to precipitate). In the same chamber are located cooling coils which remove the latent heat of evaporation and also do any sensible heat removal that may be needed. The air stream then passes through entrained moisture eliminators and is diffused in the space to be conditioned.

The absorbent liquid spray falls into a tank at the base, from which it is piped to a concentrator which removes the moisture taken from the air. The re-concentrated liquid returns to the system. This process is continuous, and the apparatus operates at full capacity at all times.

The same equipment may be used to provide winter air conditioning when required, by installing a tempering coil at the outdoor intake, an humidifier, and a reheat coil above the eliminators.

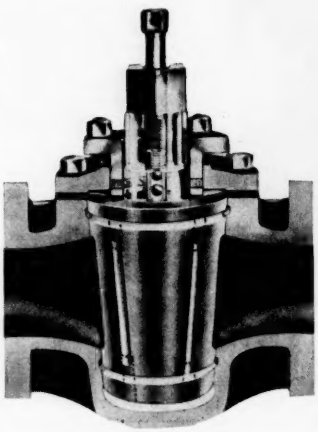
This equipment is manufactured in a range of sizes providing from 1000 to 20,000 cfm. of conditioned air from a single unit, and multiple unit installations are practical. It is expected that, by reducing the need for refrigeration, the cost of air conditioning will be reduced by this method. Applications generally are in a temperature range from 35 F. upward. Below the freezing temperature of water, the Niagara "No Frost" method is applicable.

The equipment is protected by U. S. and foreign patents. Installations have been made in food and chemical process industries, in packaging hygroscopic products, for preventing condensation of moisture on metals and other products in storage, in air conditioning for laboratory control and for human comfort. The manufacturer is the Niagara Blower Company, 405 Lexington Ave., New York 17, N. Y.

Automatic Lubrication for Pressurized Plug Valves

IN the use of pressurized plug valves on lines carrying oil, water, gas, chemicals, slurries, etc., an objection voiced by engineers is the necessity of frequent re-lubrication. This obstacle is eliminated through the use of a new system of lubrication which does not require mechanical force-feed devices and is applicable to valves of the Nordstrom type.

This lubricating device, known as "Hypermatic," is both compressible and expansible and is claimed to have dynamic properties wherein energy may be stored for prolonged periods to give automaticity to its feeding action. If a lubricated plug valve of the Nordstrom type should ever "spring" a leak, the automatic force-feed action of Hypermatic will seal the void. If the valve has been neglected, it keeps itself in a state of 100 per cent lubricated condition and remains energized. Pressure does not quickly decline but may remain for months.



New "Hypermatic' automatic lubricating device.

In a lubricated plug, valve lubricant is used for three purposes (1) to maintain a film on the unexposed seat to permit easy turning of the plug; (2) to form a pressurized seal around each port by the use of connected grooves on the plug and within the body; (3) to act as a hydraulic jack to raise the plug slightly off its seat if the plug ever becomes hard to turn. Lubricant is introduced into the valve through a hole in the shank of the plug. Sticks of lubricant are dropped into the hole and a lubricant screw is inserted, which when turned, exerts powerful hydraulic force to transmit the lubricant through the channels. But this force deteriorates in case of leakage. Hence, constant pressure is desirable so that pressure at any level will effectively push the necessary amount of lubricant into the void.

Hypermatic it is claimed will effect automatic action. Being compressible, from 50 to 100 per cent more can be inserted and stored for future use. Turning of the lubricant screw builds up the energy similar to the action of a door check which stores energy to automatically close the door. Any amount of pressure can be built up within the valve but the lubricant will actuate with a pressure of as low as 50 lbs. In very high pressure service the energy is built up to 1000 lb. and higher. It is self-feeding even though the line pressure is greatly in excess of the valve's internal lubricant pressure.

A bulletin giving detailed information and answering questions regarding this lubricant has been prepared and may be obtained by writing to Rockwell Mfg. Co., 400 North Lexington Ave., Pittsburgh 8, Pa.

Roto-Vend Ice Pick Vending Unit

A NEW Roto-Vend ice pick vending unit, designed by engineers of the Detroit City Ice & Fuel Co. is now in production. This is an attractive appearing unit, as shown in the photo, about 9 in. wide overall, 4½ in. deep and 20 in. high. It has a white case with blue lettering.

New Roto-Vend Ice Pick Vending Unit.

The machine will have a capacity of 25 picks each in a cardboard case, the pick removed from handle and attached to it with scotch tape. The size and weight of the unit will lend itself to placement on buildings, docks and vending stations.

Detroit City Ice & Fuel has in operation three candy machines converted into ice pick vendors. One had been operating three months, another two months and another one month. During that time, although placed in outlying locations, the vendors sold over 1,100 ice picks without benefit of any advertising.

RECO ICE VENDING STATIONS

Your "Silent Salesman" & "Silent Partner"

- √ FIRE PROOF
- √ SECTIONAL CONSTRUCTION
- √ SIMPLE TO EXPAND
- √ LOW COST
- √ REAL EYE-CATCHING APPEAL!

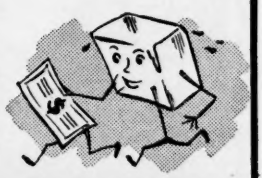
MODEL	SIZE
ID 1	6'2" x 7'9" x 8'0" H
ID 2	7'9" x 11'8" x 8'0" H
ID 3	7'9" x 15'7" x 8'0" H
ID 4	7'9" x 19'5" x 8'0" H

Sized to Receive Most Standard Vending Machines.

Write for Particulars on Size in which Interested!

CAPTURES EVERY SALE

A Reco Ice Depot or Vending Station is your daytime and after hour partner. Place it in rural areas, resort centers, on busy highways or intersections. You'll be amazed at added sales, income and profit! The trend toward Depots and Stations is one of the major merchandising advances of the industry—industry leaders consider it one of the most significant.



(REFRIGERATION ENGINEERING CORP.)

RECO PRODUCTS DIVISION
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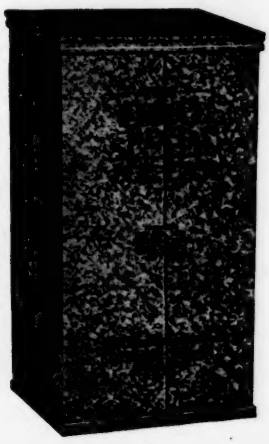
OHIO SPECIAL ICE CANS



Double Riveted Welded
Integral Tube Cans
Arctic Pownall Cans
Can Baskets
Condenser Trough

• • • • • • • • • • •

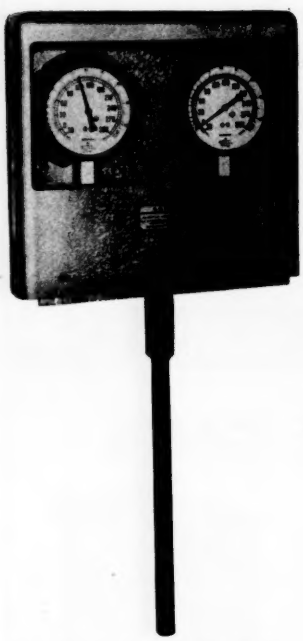
Industrial Trucks and Trailers

THE OHIO GALVANIZING & MFG. CO.

NILES — Established 1902 — OHIO

Non Condensable Gas Indicator

A NON-condensable gas indicator which shows excess pressure on the high side of a refrigerating system has been developed by C. C. Fisher, Box 348, Huntington Park, Calif., and is now in production. The unit combines two compound refrigerant pressure gauges so arranged that one gauge shows the total pressure existing at the liquid receiver. The other gauge gives the saturation pressure of the refrigerant in the receiver; thus the difference in pressure results from non-condensables in the system.

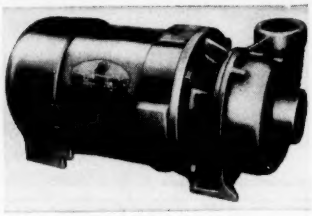


New Non-Condensable Gas Indicator

The illustration shows the indicator which the manufacturer recommends for installation on top of the refrigerant receiver with the tube extending down into the liquid refrigerant. Inside this tube as a refrigerant charged bulb which follows the temperature of the liquid refrigerant in which it is submerged. Since the refrigerant in the bulb is pure and is attached by a tube to the pressure gauge on the left, this gauge shows the saturation pressure of the refrigerant in the bulb and in the receiver. The gauge on the right is connected through the same opening into the gas space at the top of the receiver, thus to show total pressure in the receiver. The difference represents the pressure of the non condensables in the system. The instrument has application not only to refrigerating systems but also, according to the manufacturer, will be useful in chemical works, oil refineries, and any other plants where condensable vapors are processed.

New Line of Small Capacity Pumps

A NEW line of pumps, Aurora Type SAC Close-Coupled Small Capacity, Low Head Duty, Side Suction, is now being produced by The Aurora Pump Co., Aurora, Ill. These pumps are of small capacity (5 to 85 GPM) low head (0 to 45 feet head) at speeds from 1750 to 3500 RPM (depending on head and capacity required) for general service or for use as an integral part of Equipment Manufacturer's product such as air conditioning units, cooling towers, evaporator coolers, milk coolers, hot water circulators, etc.



New Aurora Small Capacity SAC Pump

They are available in sizes ¾, 1¼ and 2 in. in bronze fitted, all iron or bronze construction. Casings are vertically split. Pump and motor are supported by adaptor bracket. Suction is located at end, discharge can be rotated to any of several positions 60 degrees apart. Mechanical seal is standard equipment. Impeller is balanced, of enclosed type, of high grade bronze material. Motor built to NEMA specifications, available for all electric circuits and various enclosures—and equipped with stainless steel shaft. Ball bearings are built into the motor.

New Power Pipe Threading Tool

A NEW, electric pipe threading tool for use with popular die stocks is being manufactured by the Ter-I-Day Sales Co., Detroit. Known as Port-A-Pony, the case is cast in magnesium alloy and the complete unit weighs only 26 pounds. It is designed to be carried onto the job and be operated by one person. The capacity of the tool is from ¼ to 2 in. pipe. The motor is ½ hp, 60 cycle 110 v universal, single phase, forward and reverse, either A.C. or D.C.

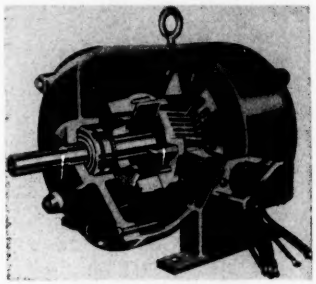
Adaptors are provided for seven popular hand stocks. Another feature of the machine is its worm driven, ring-gear principle of operation. Like hand threading, the dies rotate on the pipe itself to allow threading

The New Port-A-Pony Electric Pipe Threading Tool

on pipe already in place. The tool was designed, developed and tested over a 15 year period by a master plumber. Its construction design provides convenient operation in areas as small as 12 in. wide. It can be used; overhead, between joists, in well pits, and within five inches of walls.

New Squirrel Cage Induction Motor

A NEW squirrel cage induction motor has been announced by the Ideal Electric & Manufacturing Co., Mansfield, Ohio. The new motor is designed with ten-point protection features to assure complete satisfaction with low maintenance cost.

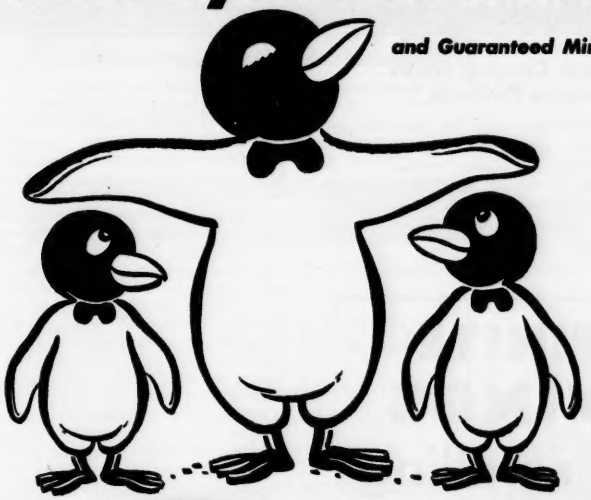


Cutaway View of New Ideal Squirrel Cage Induction Motor

A ventilation system has been designed to eliminate hot spots. Ribs supporting the core in the frame are open in the center, permitting air to circulate around and cool the back of the core. This prevents pocketing of heat. The heated air is exhausted laterally through the baffled feet

Always DEPENDABLE...

and Guaranteed Minimum 99.98% Anhydrous Ammonia



You always get peak performance when you use Du Pont "National" Ammonia. It's pure—uniform—dependable! Prompt delivery also . . . from distributing points all over the country. E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Wilmington 98, Delaware.

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NATIONAL — REG. U.S. PAT. OFF.

CYLINDER ANHYDROUS **AMMONIA**

REPAIR CEMENT

YOU CAN PERMANENTLY REPAIR AND WATERPROOF BREAKS, CRACKS AND HOLES IN STONE, CONCRETE, BRICK AND TILE.

COMCO READY-MIXED REPAIR CEMENT WILL DO THE JOB

Simply add water only and this cement becomes as hard as iron and sticks permanently to all concrete surfaces. It will not shrink. Comco Cement is waterproof, wearproof, dustproof and oilproof, and will withstand acid and alkali, producing an indestructible floor.

Comco Cement will withstand foot traffic after it has set 25 minutes. After 8 hours it will stand up under heavy-duty trucking. Comco Ready-Mixed Cement is chemically perfect, not just another flooring compound. It is guaranteed to stand up under all conditions, no matter how severe. Comco Cement will permanently line and waterproof hot and cold water tanks.

When ordering, specify Comco Resurfacing Cement for large areas, and state whether it is to be used in a refrigerated or hot room.

1 bag (100 lbs.) covers approximately 44 sq. ft. ¼-in. thick, the required thickness for heavy-duty trucking. 100-lb. bag.....$11.00

All prices F.O.B. Factory, Chicago

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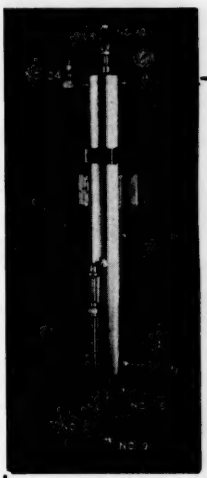

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At a price you can afford

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Small but Mighty — designed especially for Refrigerating Plants of 50 ton refrigeration, and lower capacities. Does the same job, just as efficiently, as larger high priced models. Reduces Power Costs by purging non-condensable gasses—assures uninterrupted operation.

WRITE, WIRE, PHONE for details — and NEW LOW PRICE.

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Oklahoma City, Oklahoma
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away from the air inlets. This prevents hot air being drawn back and recirculating through the motor. The closed underside of the frame prevents the escape of heated air under the motor where it would be easily picked up and recirculated.

The steel frame is continuous. Going completely around the motor, the frame gives protection on the bottom as well as an the top and sides. Air inlets and outlets are baffled to meet NEMA specifications for drip-proof protection. The motor is made with either low voltage or high voltage windings. Detailed description is available in a new Bulletin No. 200.

MANUFACTURERS' NEWS

Owens-Corning Shows Fiberglas Products

BUSINESS men of the Chicago area were guests of Owens-Corning Fiberglas Corp. October 21 at which an exhibit and demonstration of Fiberglas products was made. The exhibit was the mobile Fiberglas Product demonstration being shown in various sections of the country.

The exhibit and demonstration is planned to show architects, builders, contractors, decorators, engineers, equipment manufacturers and industrial technologists throughout the country how these products are used, what their properties are, and where they offer opportunities for product improvement. They will be shown that these products range from the soft, downy Aerocor to the relatively coarse fibers used in air filters, from glass yarns used in weaving sheer Fiberglas marquisette curtains to accoustical tile and roof insulation, from mats used in protecting underground pipe lines against corrosion to molded pipe covering, from coated fabrics for automobile convertible tops to asphalt-enclosed board used for cold storage refrigeration.

Included in the demonstration are numerous examples of Fiberglas-insulated electrical equipment, and other manufacturers' items in which Fiberglas products are used, such as frozen food shopping bags, Fiberglas-reinforced paper tape for use in packaging, reinforced plastic parts like chemical trays, and washing machine units.

Armstrong Holds General Sales Meeting

OVER 100 men comprising the industrial insulation field sales organization of the Armstrong Cork Company were brought to the Company's home office at Lancanster Pa. recently to attend the first general meeting of the group since the war.

H. R. Peck, Vice-President and General Manager of the Armstrong Cork Company's Building Materials Division, addresses members of the company's industrial insulation field sales organization at the first general meeting of the group since the war.

Advantages of VOSS COMPRESSOR VALVES

LARGER GAS PASSAGE AREA
1. From 20% to 100% increased valve area handles more and colder gas; a colder therefore denser gas costs less to compress.

LARGER VALVE AREA
2. Raises back and lowers head pressure, consequently reduces compression ratio—saving more power.

ELIMINATES SHUT DOWNS
3. Correct design—best materials—careful workmanship—means continuous performance.

SAFE
4. No castings used—therefore no invisible blow-holes or cracks which insures safety of operation. Gas passages drilled, slotted and milled smooth—hence less friction.

LONG LIFE
5. Made to the highest standard of workmanship—on special machines—by craftsmen—in a modern and well equipped shop—designed to give long life under the severest conditions.

NOISELESS
6. Smooth running—with less power—at higher speeds—without overheating.

ECONOMICAL
7. Increased capacity at a definite saving in power—replaces your present valves without any change in your compressor.

DEFINITE SAVINGS after installing J. H. H. VOSS VALVES
REG. U.S. PAT. OFF.

in your compressors

VOSS VALVES are indispensible for use where loads are heaviest; where lower operating costs are important; where safety and reliability are paramount. Increased speed after change over to VOSS VALVES often makes it possible to carry load with one compressor instead of two needed before.

Quotations and estimates on VOSS VALVES furnished on request. Case histories and testimonials of installations similar to your own supplied. Send us the name, bore, stroke and speed of your air, ammonia, or gas compressor of any type or size.

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Air Pressure Tested COILS

Electrically welded, continuous; Air-Pressure-Tested while submerged in water. Built to your specifications. Send for new Coil Data Book and let us quote.

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Double Gig Ice Hoist
Fast - Sturdy -
Dependable -

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For all around satisfaction in obtaining big quantities of water at low operating cost, install a Layne well water system. They are proved by time in hundreds of installations. Everything about the Layne water system is designed and built to be dependable under all conditions. They lead all others in high efficiency and are constructed heavy enough to stand up under the heaviest loads. Repair and upkeep expense is the lowest of all systems made. For further information, catalogs, etc., address

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Use *Air Clear* wherever food commodities are stored to reduce spoilage. General Ozone has a complete line of modern ozonizing equipment plus full service facilities for both old and new types. Write us today for further information.

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Manufacturers of ozone generating equipment for cold storage ● warehouses refrigerated cars ● walk-in coolers ● air recirculating systems.

In the sessions designed to bring Armstrong's insulation field men up to date, presentations were made on the company's objectives; its products, sales, advertising and promotion, manufacturing and research activities. Sound slide films, exhibits demonstrations and reports by members of the company's building materials division, research laboratories, Advertising and promotion department, and company executives es were utilized. H. W. Prentis, Jr., president, was one of the executives who spoke at the meeting.

Other company representatives who spoke and their subjects were: "The Company's Objectives," by Kenneth O. Bates, vice-president; "Our Sales Program," by A. E. Pearce, assistant general manager of the building materials division; "Merchandising Plan," by S. C. Martin, manager, low-temperature insulation department; "The Equipment Business," by L. E. Cover, manager, equipment insulation department; "Selective Selling," by F. W. Muller, manager, high-temperature insulation department; "Contract Operations," by W. N. Hartman, manager, contract operations; "A Better Operation," by J. W. Liddell, assistant manager, low-temperature insulation department; "The Laboratory Report," by H. C. Brown, Jr., manager, high and low temperature insulation research; "Sales Promotion," by D. S. Miller, manager, promotion and sales training department; "Advertising," by Max Banzhaf, manager building materials division advertising.

Several projected developments in both the high and low temperature insulation fields were outlined. Also announced and demonstrated at the meeting were some of the developments of Armstrong's tool research program.

A new sales promotion sound slide film, "Insulation Enemy Number One," the story of low-temperature insulation and the fight against moisture, was previewed.

Marlo Announces Price Reductions

THE Marlo Coil Co. of St. Louis has announced a price reduction of approximately 20 per cent on ammonia coils for FUA-FUB Ammonia industrial coolers and a reduction of approximately 7 per cent on all ammonia evaporative condensers. These price reductions are in line with the recent reductions in the price of hot galvanizing. In accordance with Marlo's established policies, they are being passed on to the trade.

Detroit Ice Machine Distributor for Worthington

THE Detroit Ice Machine Company has signed a franchise covering the sale of Worthington air conditioning and refrigeration equipment for the Eastern half of Michigan, it was announced recently by Worthington Pump and Machinery Corporation. Detroit Ice Machine Company was incorporated in 1916 and specializes in the sale, installation, repair and servicing of refrigeration and air conditioning equipment. Located at 2615 - 12th Street, Detroit, the Company's facilities include engineering; drafting, and service parts departments and a machine shop fully equipped for repairs and reconditioning.

Marlo Expands Facilities

TO keep pace with an ever-increasing demand for its products, Marlo Coil Company of St. Louis has announced the purchase of additional land for expansion purposes. Adjacent to the present Marlo plant site, the new addition will give the company an entire city block devoted to the manufacturing of the Marlo line of cooling and heating equipment. One-half acre of the new area will be devoted to increased production facilities, and another one-half acre will be used for added warehousing space. The company manufactures a complete line of cooling and heat transfer equipment, including evaporative condensers, cooling towers, and ceiling, floor type and special air conditioning units.

Frick Moves Boston Branch Office

THE Boston branch office of The Frick Co., Waynesboro, Pa., was moved the middle of October from 716 Columbus Ave to 419 Commonwealth Ave. The same service will be continued at the new location.

MARTOCELLO ICE PICKS

"Cost You Less To Buy The Best"

Immediate Delivery on Plain Handle Ice Picks

BLADES

of High Carbon Tool Steel, accurately tempered to give you maximum use.

HANDLES

of Sound, Clear Hard Wood with Protective Flexible Lacquer Coating.

FERRULES

of Pressed Steel securely registered on Handle and Plated to Resist Corrosion.

PRICES ON PLAIN AND PRINTED HANDLES HAVE BEEN REDUCED! WRITE TODAY FOR NEW PRICES.

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"Serving the Ice Industry Since 1916" "There is no Substitute for MARTOCELLO QUALITY"

CATALOGS and BULLETINS

Bulletin on Fiberglas Duct Insulating

A NEW 12-page publication has been issued containing design data for the application of Fiberglas duct insulating materials. Properties of the materials are described and a 2-page, illustrated section provides a detailed description of field application procedure. Copies may be obtained from Owens-Corning Fiberglas Corp., Toledo 1 ,Ohio.

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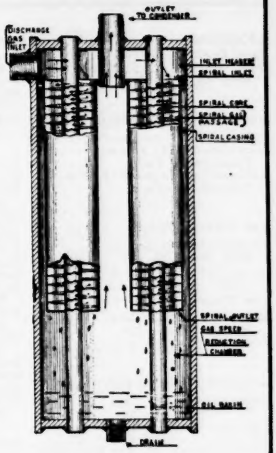
STOPS OIL FROM ENTERING CONDENSER RECEIVER AND LOW SIDE

Allows operation as was originally intended. Simple in operation — no parts to wear out — no screens, metal wool or any close screens to clog, raise discharge pressures and cut down capacity.

When used in connection with air compressors, water is also separated with the oil.



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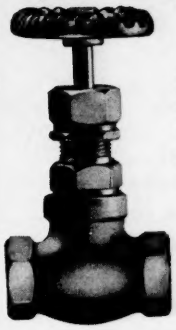
SHANK REFRIGERATION PRODUCTS

A good Valve-Saves a lot of trouble!



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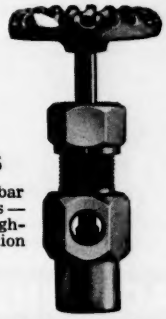
Highest grade non-porous metal—full size ports—clean cut threads. Back seated stem — Shank design base — perfect alignment. Long life packing ring.



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Compact — Machined from bar stock steel — Full size ports — Completely rust-proofed — Highest grade graphited composition packing. All popular sizes.

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Refrigeration Engineering Corp., Philadelphia, Pa.

AIR CIRCULATORS
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AIR COMPRESSORS
Baker Refrigeration Corp. So. Windham, Maine
Frick Co., Waynesboro, Pa.

AIR CONDITIONING EQUIPMENT
Baker Refrigeration Corp. So. Windham, Maine
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Niagara Blower Co., New York, N.Y.

AIR PURIFYING EQUIPMENT
General Ozone Corp., Chicago, Ill.

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(See Air Compressors)

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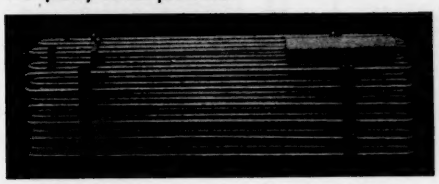

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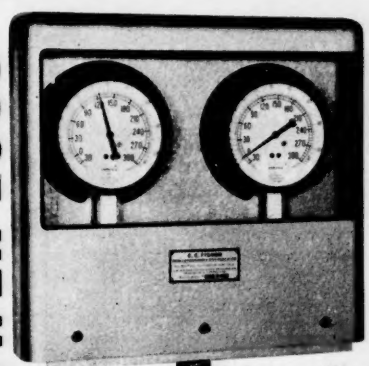

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made by The National
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All features that you demand are furnished regularly in National Pipe Bending Refrigeration coils—smooth bends, perfect welds, measurements exact.

For long service, specify coils by the National

Pipe Bending Co.
Established 1883
162 River St., New Haven, Conn.

THE BUYERS

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Refrigeration Engineering Corp., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Vogt Machine Co., Henry, Louisville, Ky.

ELEVATING & CONVEYING MACHINERY
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.

ENGINEERS AND ARCHITECTS
(See Architects and Engineers)

ENGINES
Caterpillar Tractor Co., Peoria, Ill.
Frick Co., Waynesboro, Pa.

EVAPORATIVE CONDENSERS
Niagara Blower Co., New York, N.Y.

EVAPORATORS
Acme Industries, Inc., Jackson, Mich.
Creamery Package Mfg. Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Niagara Blower Co., New York, N.Y.
Vogt Machine Co., Henry, Louisville, Ky.

FEED-WATER HEATERS
National Pipe Bending Co., New Haven, Conn.
Vogt Machine Co., Henry, Louisville, Ky.

FIBERGLAS
Armstrong Cork Co., Lancaster, Pa.

FIELD ICE SAWS
Gifford-Wood Co., Hudson, N. Y.
United Ice & Oil Supply, Boston, Mass.

FILTERS, WATER
Frick Co., Waynesboro, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.

FIN COILS
Acme Industries, Inc., Jackson, Mich.
Howe Ice Machine Co., Chicago, Ill.
Rempe Company, Chicago, Ill.

FITTNIGS
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.

FOOD FREEZING EQUIPMENT
Baker Refrigeration Corp. So. Windham, Maine
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill
Vogt Machine Co., Henry, Louisville, Ky.

FROZEN FOOD LOCKERS
Knickerbocker Stamping Co., Parkersburg, W. Va.
Rempe Company, Chicago, Ill.

FUEL OIL PRE-HEATERS
National Pipe Bending Co., New Haven, Conn.

GAS AND OIL ENGINES
Caterpillar Tractor Co., Peoria, Ill.

GAS INDICATORS, NON-CONDENSABLE
Fisher, C. C., Huntington Park, Calif.

HAND TRUCKS
Ohio Galvanizing & Mfg. Co., Niles, Ohio

HOISTING APPARATUS
Capital Elevator & Mfg. Co., Columbus, Ohio
Reynolds Mfg. Co., Springfield, Mo.

ICE BAGS
Union Bag & Paper Corp., New York, N. Y.

ICE BLOWERS
Gifford-Wood Co., Hudson, N. Y.

ICE CAN FILLERS
Frick Co., Waynesboro, Pa.
Knickerbocker Stamping Co., Parkersburg, W. Va.
Martocello & Co., Jos. A., Philadelphia, Pa.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Refrigeration Engineering Corp., Philadelphia, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

ICE CANS
Frick Co., Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Knickerbocker Stamping Co., Parkersburg, W. Va.
Martocello & Co., Jos. A., Philadelphia, Pa.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Refrigeration Engineering Corp., Philadelphia, Pa.

ICE CHIPPERS
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.
Jamison Cold Storage Door Co., Hagerstown, Md.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Co., Minneapolis, Minn.
Refrigeration Engineering Corp., Philadelphia, Pa.
United Ice & Oil Supply, Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE CHUTES
Frick Co., Waynesboro, Pa.
Gifford-Wood Co., Hudson, N. Y.
Jamison Cold Storage Door Co., Hagerstown, Md.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.

ICE CONVEYORS
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.
Refrigeration Engineering Co., Minneapolis, Minn.
United Ice & Oil Supply, Boston, Mass.

ICE CREAM PLANTS
Baker Refrigeration Corp. So. Windham, Maine
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

ICE CRUSHERS
Bateman Foundry & Machine Co., Inc., Mineral Wells, Texas
Gifford-Wood Co., Hudson, N. Y.
Index Coupon & Supply Co., La Porte, Ind.

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Refrigeration Engineering Corp., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE CUBE CONTAINERS
Index Coupon & Supply Co., La Porte, Ind.
Union Bag & Paper Co., New York, N. Y.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE CUBERS
Gifford-Wood Co., Hudson, N. Y.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE CUBING MACHINES
Gifford-Wood Co., Hudson, N. Y.
United Ice & Oil Supply Co., Boston, Mass.

ICE DELIVERY BAGS
Eward Co., H. D., Ft. Wayne, Ind.
Gifford-Wood Co., Hudson, N. Y.
Index Coupon & Supply Co., La Porte, Ind.
Martocello & Co., Jos. A., Philadelphia, Pa.
Pittsburgh Waterproof Co., Pittsburgh, Pa.
Union Bag & Paper Corp., New York, N. Y.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE ELEVATORS AND CONVEYORS
Gifford-Wood Co., Hudson, N. Y.
Capital Elevator & Mfg. Co., The, Columbus, Ohio

ICE HARVESTING MACHINERY & TOOLS
Gifford-Wood Co., Hudson, N. Y.
United Ice & Oil Supply Co., Boston, Mass.

ICE MAKING AND REFRIGERATING MACHINERY
Baker Ice Machine Co., Inc., South Windham, Maine
Creamery Package Mfg. Co., Chicago, Il.
Dersch, Geeswein & Neuert, Inc. Chicago, Ill.
Frick Company, Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wisc.
Vogt Machine Co., Henry, Louisville, Ky.

ICE PICKS AND PLANERS
Gifford-Wood Co., Hudson, N. Y.
Index Coupon & Supply Co., La Porte, Ind.
Martocello & Co., Jos. A., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE PICK SCABBARDS
Gifford-Wood Co., Hudson, N. Y.
Index Coupon & Supply Co., La Porte, Ind.
Martocello & Co., Jos. A., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE PICK VENDING MACHINES
Towel Mfg. Co. Inc., Mount Vernon, Ill.

ICE PLANTS
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Refrigeration Engineering Corp. Philadelphia, Pa.

ICE RECORDING MACHINERY
Jamison Cold Storage Door Co., Hagerstown, Md.

ICE SCALES
Gifford-Wood Co., Hudson, N. Y.
Index Coupon & Supply Co., La Porte, Ind.
Martocello & Co., Jos. A., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE TONGS
Anchor Mfg. Co., The, McClure, Ohio

ICE TOOLS
Gifford-Wood Co., Hudson, N. Y.
Index Coupon & Supply Co., La Porte, Ind.
Martocello & Co., Jos. A., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE VENDORS
Dickinson & Co., F. B. Des Moines, Ia.
Frick Company, Waynesboro, Pa.
Jamison Cold Storage Door Co., Hagerstown, Md.
Refrigeration Engineering Co. Minneapolis, Minn.
S & S Vending Machine Co., San Jose, Calif.
Towel Mfg. Co. Inc., Mount Vernon, Ill.
United Ice & Oil Supply Co., Boston, Mass.

ICED DISPLAY CASES
(See Display Cases)

INSTANTANEOUS HEATERS
National Pipe Bending Co., New Haven, Conn.

INSULATING MATERIALS
American Hair & Felt Co., Chicago, Ill.
Armstrong Cork Co., Lancaster, Pa.
Mundet Cork Corp., Brooklyn, N. Y.
Pacific Lumber Co., San Francisco, Calif.

LOW TEMPERATURE EQUIPMENT
(See Ice Making and Refrigerating Machinery)

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Ohio Galvanizing & Mfg. Co., Niles, Ohio
The Mote-Truc Co., Cleveland, Ohio

OIL AND LUBRICANTS
Frick Company, Waynesboro, Pa.
Socony-Vacuum Oil Co., Inc., New York, N. Y.
Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

BUYERS DIRECTORY CONTINUED— NEXT PAGE

BOWER
B B Brand
AMMONIA

Est. 1858

Immediate shipment and purity of product are two good reasons for specifying Bower Brand. Please keep empty cylinder rotating.

HENRY BOWER CHEMICAL MANUFACTURING COMPANY
29th & GRAY'S FERRY ROAD
PHILADELPHIA, PA.

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Coated Both Sides With Paraffine

ANY COLOR

ANY SIZE

We Make Any Design of Ice Signal Card

Send In Your Individually Designed Cards for Quotation

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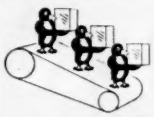
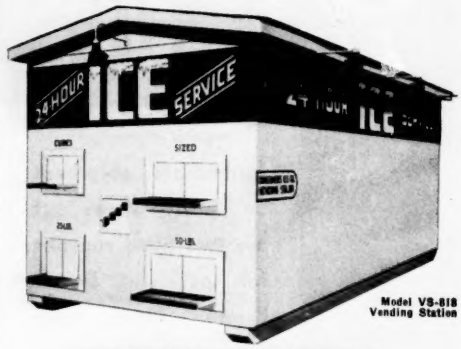
Index Coupon & Supply Co.
LaPorte, Indiana



Penguin ICE SERVICE



Model VS-818
Vending Station

PENGUIN AUTOMATIC

ICE VENDING STATIONS ARE ENGINEERED

for long operation. All electrical parts are installed in an unrefrigerated anteroom where the motors, electrical mechanisms, etc. operate at normal temperature in the absence of moisture and freezing. Vending machines in the refrigerated space are constructed of rustproof Aluminum-copper alloy.

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TOWAL MANUFACTURING CO., INC.

MT. VERNON ILLINOIS, U.S.A.

Philadelphia Pipe Coils
ESTABLISHED 1880
Continuous Welded Pipe Coils of Any Metal, Size or Design
PHILADELPHIA PIPE BENDING CO.
FIFTH STREET & N. P. R. R.
PHILADELPHIA

THE BUYERS

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OILS, CUTTING
Socony-Vacuum Oil Co., Inc., New York, N. Y.
Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

OIL SEPARATORS
King-Zeero Company, Chicago, Ill.
Rex Engineering & Sales Co. Oklahoma City, Okla.

OILS, FUEL
Socony-Vacuum Oil Co., Inc., New York, N. Y.
Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

PACKINGS
Frick Company, Waynesboro, Pa.
Vivian Mfg. Co., St. Louis, Mo.

PALLET TRUCKS (MOTORIZED)
The Moto-Truc Co., Cleveland, Ohio

PIPE COILS AND BENDS
Acme Industries, Inc., Jackson, Mich.
Chicago Nipple Mfg. Co., Chicago, Ill.
Frick Company, Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Rempe Company, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

PIPE COVERING
(See Coverings, Pipe and Boiler)

PIPE WELDING
Acme Industries, Inc., Jackson, Mich.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

PIPING
Acme Industries, Inc., Jackson, Mich.
Byers Co., A. M., Pittsburgh, Pa.
Frick Company, Waynesboro, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
Rempe Company, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

PRESSURE BLOWERS
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

PROPELLERS
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.

PUMPING MACHINERY
Aurora Pump Co., Aurora, Ill.
Deming Co., The, Salem, O.
Layne & Bowler, Inc., Memphis, Tenn.

PUMPING MACHINERY, Contd.
Refrigeration Engineering Corp., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

PUMPING MACHINERY—AIR LIFT
Deming Co., The, Salem, O.
Martocello & Co., Jos. A., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

PUMPS, AMMONIA AND BRINE
Baker Refrigeration Corp., So. Windham, Maine
Deming Co., The, Salem, O.
Frick Company, Waynesboro, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.
Vogt Machine Co., Henry, Louisville, Ky.

PUMPS, DEEP WELL
Deming Co., The, Salem, O.
Layne & Bowler, Inc., Memphis, Tenn.

PUMPS, ROTARY
Aurora Pump Company, Aurora, Ill.
Deming Co., The, Salem, O.
Martocello & Co., Jos. A., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

PURGERS
Armstrong Machine Works, Three Rivers, Mich.
Frick Company, Waynesboro, Pa.
Rex Engineering & Sales Co. Oklahoma City, Okla.

RAW WATER FREEZING SYSTEMS
Frick Co., Waynesboro, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

REBOILERS
Frick Company, Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

REFRIGERATED ICE STATIONS
Dickinson & Co., F. B., Des Moines, Ia.
Refrigeration Engineering Co., Minneapolis, Minn.
S & S Vending Machine Co., San Jose, Calif.
Towal Mfg. Co. Inc., Mount Vernon, Ill.

REFRIGERATING AND ICE MAKING MACHINERY
(See Ice Making and Refrigerating Machinery)

REFRIGERATOR FANS
Reynolds Electric Co., River Grove, Ill.

RUST PREVENTIVES
Bower Chemical Co., Henry, Philadelphia, Pa.

SCORING MACHINES
Frick Company, Waynesboro, Pa.
Gifford-Wood Co., Hudson, N. Y.
Perfection Ice Scoring Machine Co., Fort Worth, Texas
United ce & Oil Supply Co., Boston, Mass.

SECOND HAND MACHINERY AND SUPPLIES
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United ce & Oil Supply Co., Boston, Mass.

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Vilter Mfg. Co., Milwaukee, Wisc.
Vogt Machine Co., Henry, Louisville, Ky.

SHOULDER PADS
Gifford-Wood Co., Hudson, N. Y.
Index Coupon & Supply Co., La Porte, Ind.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

SIZED ICE EQUIPMENT
Bateman Foundry & Machine Co., Inc., Mineral Wells, Texas
Gifford-Wood Co., Hudson, N. Y.
Vivian Mfg. Co., St. Louis, Mo.

SPRAY COOLING SYSTEMS
Binks Mfg. Co., Chicago, Ill.

SPRAY NOZZLES
Binks Mfg. Co., Chicago, Ill.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.

SPRAY PONDS
Binks Mfg. Co., Chicago, Ill.
Frick Company, Waynesboro, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.

STORAGE HEATERS
National Pipe Bending Co., New Haven, Conn.

STRAINERS
Martocello & Co., Jos. A., Philadelphia, Pa.

TANKS
Frick Company, Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

TARPAULINS
Index Coupon & Supply Co., La Porte, Ind.
United ce & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

THERMOMETERS
Martocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.

TIERING MACHINES
Capital Elevator & Mfg. Co.,
Gifford-Wood Co., Hudson, N. Y.

TRAPS, OIL & STEAM
Armstrong Machine Works, Three Rivers, Mich.

TRUCK BODIES
Gifford-Wood Co., Hudson, N. Y.

TRUCKS, MOTORIZED LIFT
The Moto-Truc Co., Cleveland, Ohio

UNIT COOLERS
Acme Industries, Inc., Jackson, Mich.
Howe Ice Machine Co., Chicago, Ill.
Niagara Blower Co., New York, N.Y.

USED MACHINERY
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.

VALVES AND FITTINGS
Alco Valve Co., St. Louis, Mo.
Frick Company, Waynesboro, Pa.
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Phillips & Co., H. A., Chicago, Ill.
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Rempe Co., Chicago, Ill.
Shank Co., Cyrus, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.
Voss, Inc., J. H. H., New York, N.Y.

WATER COOLERS
Acme Industries, Inc., Jackson, Mich.
Niagara Blower Co., New York, N.Y.

WATERPROOFING MATERIAL
Concrete Materials Corp., Chicago, Ill.

WATER SUPPLY CONTRACTORS
Layne & Bowler, Inc., Memphis, Tenn.

WATER TREATMENT MATERIALS
Chemical Solvent Co., Birmingham, Ala.
Mathieson Chemical Corp., Baltimore, Md.

WELDING
Frick Company, Waynesboro, Pa.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Rempe Company, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

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Largest Pipe Coil Plant in the U.S.A.
57 Years Experience

New Methods New "Know How"

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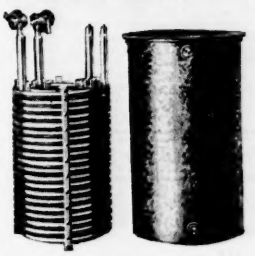

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One of the many hundreds of specially designed Rempe products for heat transfer. Used for water cooling or any type of liquid cooling as low as 90° below zero.

HEAT TRANSFER EQUIPMENT REMPE CO. Established 1909

Quality-built Heat Transfer Equipment, Coils and Bends of all types for Ice and Refrigeration plants, Cold Storage plants—all types of industry.

Buy Rempe Coils for longer life—less maintenance. Send us your problems for engineering assistance.

REMPE COMPANY
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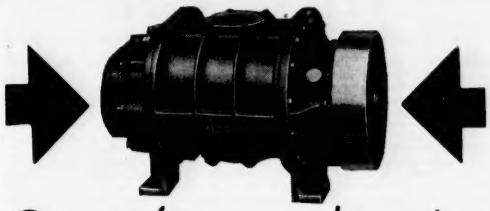


Get set for an early spring with R-C Blowers

To meet profitable spring and summer demands, don't risk down-time or lack of capacity. Plan now for replacements or additional capacity with R-C Rotary Positive Blowers. Tried and proved for years by ice plant operators, R-C Blowers dependably deliver the exact volume of air you need for your requirements.

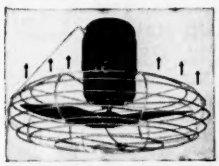
Sturdy, simple R-C Blowers assure rated capacities and a minimum of maintenance. Start planning for next year now. Write us your requirements or ask for Bulletin R-C 1247, without obligation.

ROOTS-CONNERSVILLE BLOWER CORPORATION
912 Columbia Avenue Connersville, Ind.
One of the Dresser Industries

ROOTS-CONNERSVILLE BLOWER BUILDERS SINCE 1854

THE FAN THAT BLOWS *upwards*

Reco



REFRIGERATOR FAN

Wet and smelly coolers not only are injurious to stored products and are poor housekeeping, but they are expensive because it results in excessive refrigerating costs.

The RECO Refrigerator Fan is easily installed at small expense. It produces slow moving air which keeps coolers dry and sanitary; dissipates odors and keeps coils free from frost and ice.

REYNOLDS ELECTRIC COMPANY
Established 1900
3060 RIVER ROAD RIVER GROVE, ILL.
*Reg. U.S. Pat. Off.

FREE

Write for Bulletin 241 giving valuable information about maintenance of refrigerated areas.

WANTED and FOR SALE ADVERTISEMENTS

Rates: $3.50 for 50 words or less; 60c for each additional 10 words or fraction thereof; 75c per line for bold face headings; $9.00 per inch for ads all set in bold face type or listing items on separate lines.

POSITIONS AND HELP WANTED

WANTED—CHIEF ENGINEER—large rural long established cold storage and ice manufacturing business. Steam license and maintenance experience required. Salary commensurate with demonstrated ability. Write Box 117, Glassboro, New Jersey, giving experience, age and date available.

POSITION WANTED—With progressive ice manufacturing company with chance for advancement after proving worth. Been in ice business life-time, allowing three years for service and three years in a 500 frozen food locker plant, which I constructed and recently sold. Also helped construct my father's 30-ton ice plant. Married; two children. Location of position should have good schools. Address Box DC-6, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

ICE PLANTS—*Wanted and For Sale*

FOR SALE—Complete ice manufacturing plant, 150 can capacity, 11x22x44, tanks, coils, compressors, crane, etc. At your own price. Must be moved from building. Fittings, coil in cooler room. Act quickly! Gordon Equipment Co., 6530 W. Jefferson Ave., Detroit 17, Mich.

FOR SALE

80 ton daily capacity modern raw water electrically powered ice manufacturing plant. Can be divided into two 40 ton plants. Will sell all or half. Will contract to load on cars or ship. MICO, 861 Carondelet St., New Orleans 13, La.

FOR LEASE—Ice plant and coal yard in industrial city of 25,000 population. Find out how little it takes to get in business for yourself. This is a real opportunity for a man who can operate a plant himself. For particulars, write George P. Samman, 1509 Williamson Bldg., Cleveland 14, Ohio.

FOR SALE—Ice manufacturing and storage business in busy coal and steel third class city near Pittsburgh industrial area. 40 ton plant, 5000 block storage room, garage 5200 sq. ft. floor space. Established and family owned for over 27 years. Owner wishes to retire. Sell outright, or controlling interest, leaving one other stockholder in corporation. Address Box DC-10, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

FOR SALE—Modern ice plant, 20 tons capacity. Located in deep South; good climate, large territory; good future. Could stand enlarging to double its size. About 4 years old. Must sell on account of sickness. No reasonable offer refused. Cash or terms. An opportunity of a lifetime to a person sincerely interested in purchasing an ice plant. Address Box NV-16 Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

FOR SALE

25 ton raw water ice plant, 100 car storage plant containing 600 lockers; 500 rented and 100 new, just installed. Complete processing plant. Cinder block building. All equipment included. Located in Colorado; come and make offer. Am going to hospital next month. Address Box DC-14, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

FOR SALE—15 ton ice plant complete; located in good South Carolina town, without competition. 195 can tank with York trunk system. Cans 11"x22"x50". York high speed compressor 7½x7½. All trucks and equipment in good condition. Plant sells more than capacity. $10,000.00 cash, balance on time to the right party. Wonderful opportunity for young man who wants to get in business. Larger business in different section of state where owner lives takes all of time. Address Box DC-4, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

USED MACHINERY—*Wanted and For Sale*

WANTED—In the market for any good used refrigerating and ice making equipment you may have for sale. Address Box DC-19, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

FOR SALE—Two 2 h.p. agitators; one 3 h.p. agitator; one 1 h.p. core pump; one 5 h.p. blower; one 3 h.p. blower; one Uline scoring machine; 206 cans 11 x 22 x 50; 350 cans 11½ x 22½ x 45. Write P.O. Box 53, Cincinnati, Ohio.

FOR SALE—Large Champion ice crusher that can crush a 300# block of ice at one time. It has bucket elevators to elevate the crushed ice so that sizing with screens is practical. Write for further information. The Terminal Cold Storage and Ice Co., 20-40 Eaker St., Dayton Ohio.

FOR SALE—120 h.p. Fairbanks-Morse Diesel, direct connected to 75 KW generator. In good condition. Reasonab...le; cash or trade. WANTED—12½x14½ York ammonia compressor with direct connected motor. Must be in good condition. L. P. Ilgen, Brook Park, Lewisburg, Penna.

FOR SALE—One 4x4 York and 3x3 Frick, self contained. Yorks, 3x3, 4x4, 5x5, 6x6, 7½x7½, 8x8 and 9x9, splash lubrication. One 20 ton Vogt horizontal shell and tube condenser. Two 10 h.p. Freon condensing units. Four Acme Freon suspended type blowers. Write E. Niebling, 1318 St. Clair Ave., Mount Healthy, Cincinnati 31, Ohio.

FOR SALE—Complete 20 ton Arctic Pownall ice manufacturing plant with two 9x9 compressors, 1 each York 9x9, Frick 6x6, Baker 4½x5 self-contained unit, York 5x5 self-contained unit. Two Lipman 4 cylinder self-contained units; 1¼"x5" weld return bends. Frick 10x10 pistons and crank shafts, flywheels. 1 each Fairbanks-Morse 150 and 180 h.p. Diesel engines. 1 each 40 and 60 KVA AC generators with freezer doors, pipe coils, ammonia fittings; 15 h.p. G.E. DC motor. 1—30 h.p. AC motor. Parke Pettegrew & Son Co., 370 W. Broad St., Columbus 8, Ohio.

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WANTED—Good used vertical 5 h.p. agitator, 220 volts, 3 phase. Also used 4 can ice chute for 300 lb. ice blocks. Glasgow Ice Plant, East Main St., Glasgow, Kentucky.

FOR SALE—One 100 h.p. type Y Fairbanks-Morse Diesel engine, belted to 9x9 Frick dual effect compressor and 7½ KW generator. Also one 25 h.p. type J Fairbanks-Morse Diesel engine belted to 6x6 Sterling compressor. Excelsior Ice Company, Excelsior Springs, Missouri.

FOR SALE—4 Ingersoll-Rand ammonia compressors 50, 90 and 100 tons, direct connected to synchronous motors. 1 York 6½ x 6½ h.s. V belt, forced feed lubrication. 1 York 6½ x 6½ slow speed. 1 new 8½ x 8½ Vilter V belt drive. 3 transformers. 500 ice cans 300 lbs. 2 large brine coolers; electric cranes; 10,000 ft. 2" ammonia pipe with return bends, like new. 4 high pressure boilers. H. Loeb & Son, 4643 Lancaster Ave., Philadelphia 31, Penna.

FOR SALE—ICE PLANTS AND EQUIPMENT

1—30 ton York ice making plant—Trunk coil 4 can pull electric driven.
1—25 ton York ice making plant—Brine coolers electric driven.
1—10 ton York ice making plant—Brine coolers electric driven.
1— 5 ton York ice making plant—Brine coolers electric driven.

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1—10x10 York 300 r.p.m. direct connected to 100 h.p. synchronous motor.
1—10x10 York 275 r.p.m. F.F.L.
1—9x9 York 250 r.p.m. F.F.L.
2—7x7 Worthingtons 400 r.p.m. 50 h.p. motors.
2—6½x6½ Yorks 300 r.p.m. F.F.L.
1—6¼x6¼ Baker 300 r.p.m. F.F.L.
1—6x6 York 360 r.p.m. late type.
1—6x6 Frick 277 r.p.m.
1—5x5 York self-contained unit.
1—4x4 York self contained unit.
4—16" dia. x 18' L. horizontal shell & tube condensers, 42—1¼" tubes.
1—Gifford Wood ice scoring machine 300# blocks.
4000' of 2" pipe coils.
1—36"x10' long horizontal brine cooler 149—2" tubes.
300—11½x22½x44" ice cans.
100—1x22x46" ice cans.
New ice crushers and crusher blowers.

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Phone: Mitchell 3-7790 Cable Address "BERECO"

FOR SALE—One 6¼"x5" V/W York ammonia booster compressor 8 cylinder V-belt drive complete with base, including 440 volt A.C. motor and 36"x12' long D.E. gas and liquor cooler plus valves. This equipment is new and has never been installed. If interested contact W. A. Moore, General Manager, New Orleans Cold Storage & Warehouse Co. Ltd., 305 Gaiennie St., New Orleans, La.

FOR SALE—7x7 Frick high speed compressor complete with 50 h.p. Westinghouse motor and auto-starter. Also pre-cooling coils and tanks. Excellent condition. 1—Mathews impeller type vegetable washer complete; used very little. Gould pumps and gear reductors; write for complete description of washhouse equipment. C. Roy Curtis & Son Inc., Marion, New York.

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1—20 ton York ice plant electric driven.
1—30 ton York ice plant electric driven, herringbone coils, late type.
1—100 tor ice plant, electric driven.
1—7" x 10" York two cylinder ammonia compressor.
1—6½" x 6½" two cylinder York ammonia compressor, high speed.
1—11" x 13" York ammonia compressor direct connected to synchronous motor.
1—6" x 6" two cylinder Voss high speed ammonia compressor.
2—4" x 4" two cylinder York high speed ammonia compressor.
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2—16" dia. x 10'-0" long 6 pass enclosed type ammonia condenser.
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2—Perfection ice scoring machine 300# blocks.
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Brine coolers, double pipe 2" and 2" horizontal brine coolers, submerged shell and tube type, 1¼" and 2" ammonia coils, approximately 10,000 feet. Send us your requirements on any equipment you may need.

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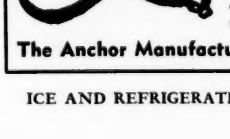

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Compressors With or Without Motors

	Item No.
1—4x4 York, 300 RPM	16
6—6x6 York's, 200 RPM	20
1—6x6 Frick, 257 RPM	21
2—6½x6½ Arctics, 350 RPM, forced feed lub.	30
1—7¼x7¼ Baker, 350 RPM, forced feed lubrication	35
1—7x7 Frick, 200 RPM	40
1—7½x7½ York, 200 RPM	51
2—9x9 Arctic, 300 RPM, forced feed lub.	62
1—9x9 Frick 225 RPM direct connected to a 60 HP synchronous motor, forced feed lubrication	67
2—9x9 Late type Yorks, 400 RPM, forced feed lub.	69
1—9x9 Frick, 200 RPM	70
1—9x9 York, 200 RPM	71
1—9x9 Worthington, 325 RPM, forced feed lub.	72
1—10x10 De La Vergne, 360 RPM, forced feed lub.	73
1—10x10 York, 257 RPM, forced feed lub.	80
1—10x10 Carbondale, 100 HP synch. motor, 350 RPM	81
3—10x10 York's, 225 RPM, semi-forced feed lub.	82
1—12x12 Frick, Forced feed, 300 RPM	89
1—11x13 York, 164 RPM, forced feed lub.	90
1—17x18 Frick, direct conn. 300 HP synch. motor	91

Diesel Driven and Diesel Engines

1—8x8 York—Direct connected to 50 H.P. Fairbanks-Morse at 257 R.P.M.	210
1—175 H.P. Fairbanks-Morse Diesel engine	211
1—150 H.P. Van Severin—300 R.P.M.—Diesel engine	212

Steam Driven

1—18 ton Vertical 6½x6½ Arctic	321
1—7½x7½ Vertical York, 200 R.P.M. direct connected to steam engine	326
1—8x8 Vertical York, 300 R.P.M. direct connected	327

Complete Ice Plants

	Item No.
1—15-ton electric driven plant	630
1—600 Can Trunk Coil Type—York Plant, Brand New Tank. *Complete with 10 Can Grids. This plant is equal to new*	631
Brand New 8 to 10-ton Clear Ice-Making Plants—110 Cans—Electric or Diesel Drive—2 Can Pull	632
2—247 Can, 22-ton ice plants, like new	632A
1—35-38 ton New Clear Ice Making Plants	635

Self-Contained Units

1—5x5 York—390 R.P.M.	743
1—4½x5 Lipman—360 R.P.M.	744
1—3x3 Worthington	748
1—5x5 Frick—Forced Feed—400 R.P.M. Latest Type	758

Brine Coolers

1—34x12—96—2—Retubed	801
1—34x10—100—2	802
1—48"x16'—130—2" tubes	808

Condensers

3—100 ton shell and tube condensers retubed	919
2—Stands—Vogt Multi-tube—Each stand 6 pipes high. Each pipe 9"x18" with 7—2" tubes	920
1—125-ton, Vertical Shell & Tube, 196 2" tubes	921
1—120 ton, 216—2" retubed Vertical Shell & Tube	922
2—20 ton Horizontal—retubed	924

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400—11½"x22½"x44"—cap refinished in zinc

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6x6 to 10x10—390 R.P.M.	1002
3x3 to 5 x 5 —Self-contained units, complete	1003
5x5—Self contained—15 H.P. motor—V Belt	1004

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4—12¾x12 Horizontal—36—1¼" tubes	1020
2—30x14 Vertical 109—2" tubes	1021
1—16"x10"x10' Shell and Tube Condenser, 60 1¼" tubes	1022

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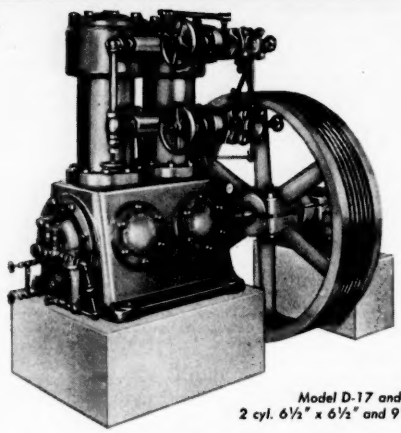

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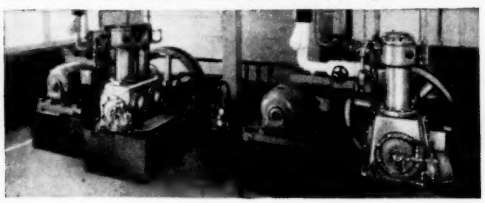

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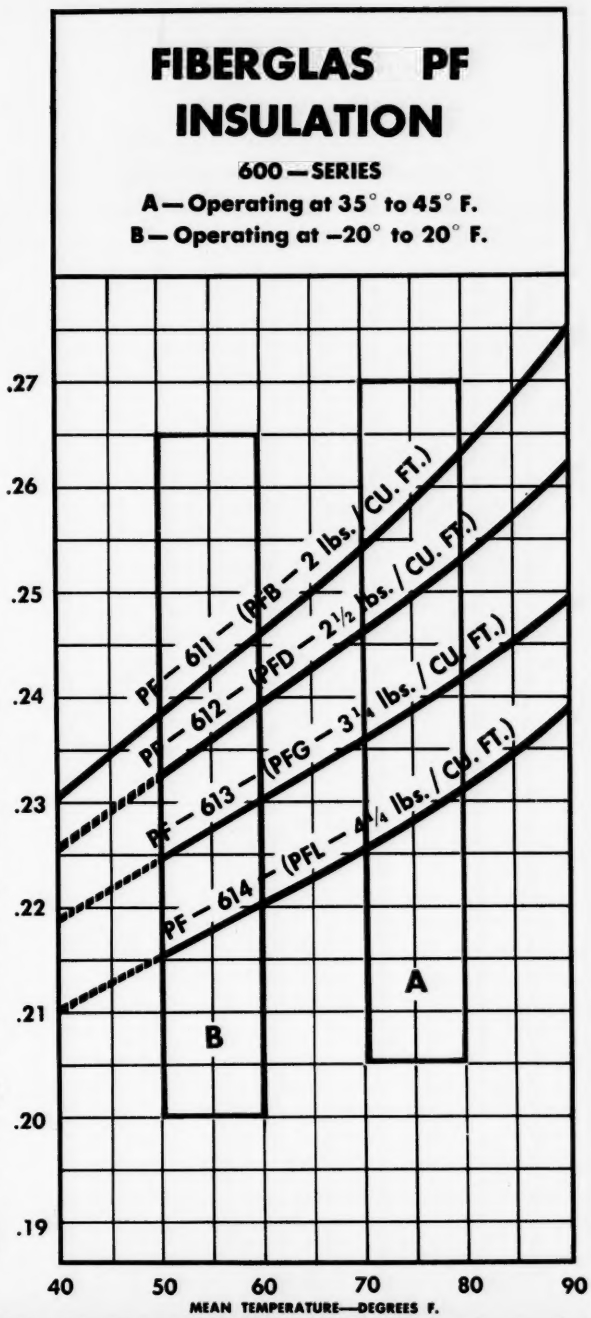

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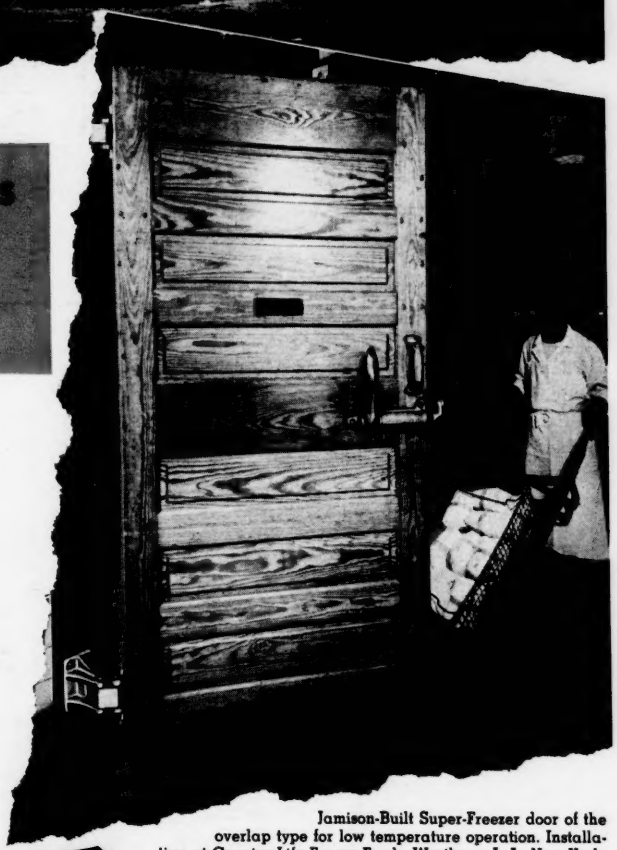

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